Stylistic Variation and Social Perception in Second Dialect Acquisition

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Abstract

This dissertation examines how mobile speakers' language use and social perception of language interact with their place-based identities. Specifically, I examine audience-based and topic-based style shift in speech production, as well as the social perception of second dialect (D2) use. This work focuses on Mandarin speakers from Xiamen, a city in Southern China, who moved to Beijing for college education. It investigates three linguistic features that differentiated Northern and Xiamen Mandarin: the /s/-/ʂ/ contrast, neutral tone, and /w/->[ʊ].

The effect of audience regional background (Northern vs. Xiamen) was examined by the means of a friend-with-friend conversation task, followed by wordlist reading. Effects of audience regional background (Northern vs. Xiamen) and speaker's Beijing orientation were found for /ʂ/ and neutral tone: the mobile speakers used more Northern Mandarin variants when talking to their Northern friend, and those who were more oriented towards Beijing also had more Northern Mandarin-like production. Additionally, an interaction of audience and Beijing orientation was found for /ʂ/, such that speakers who were less oriented to Beijing were more likely to use Xiamen Mandarin with a Xiamen friend than those that had more positive Beijing orientation.

The effect of place-based topic was examined through speakers' production of two reading passages, which were Xiamen-themed and Beijing-themed, respectively. No significant effect of topic was observed for /s/-/ʂ/ and neutral tone, and there was a significant effect for /w/->[ʊ] in the unexpected direction.

The social perception study adopted a between-speaker matched-guise technique to investigate how mobile Xiamen speakers perceived the acquisition of Northern Mandarin. The effects for the three linguistic features were examined separately. The results showed that

when D2 Northern Mandarin features were incorporated into the speech of Xiamen Mandarin speakers, they were perceived as more likely to build a connection to the Northern community and more talkative and energetic compared to when they used the D1 variants. For /w/->[ʊ], the use of Northern Mandarin guise was perceived as less likable. An interaction was found between the listeners' intention to return to Xiamen and guise: those who were less likely to return to Xiamen were more likely to rate the D2 Northern Mandarin guise as more Beijing-oriented.

This dissertation is one of the first few large-scale studies that have shown audience-based style shift for second dialect users. This finding calls for closer examination of how researchers' own linguistic background affects D2 learners' production. In addition, this work has also found effects of attitude (i.e Beijing orientation) on D2 use (for /ʂ/ and neutral tone) and style-shift (for /ʂ/). Comparing how the attitude effect differs across the linguistic variables, I concluded that factors like explicit knowledge, prestige and the overall extent of D2 use can play a role for this effect.

The comparison between the results of the production and social perception revealed that, for /ʂ/ and neutral tone, there was a congruence in the relationship between place-based identities and D2 use: the more Beijing-oriented speakers used more D2 features, and those who used more D2 features were perceived as more likely to form connections with the Northern Mandarin-speaking community. For /w/->[ʊ], there was an asymmetry such that it did not exhibit expected style shift, but could index several social meanings in perception. This finding suggests in addition to examining place-based identity in production, it is crucial to also include a perceptual perspective.

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Chapter 1

Introduction

In this dissertation, I investigate how mobile speakers' language use and their social perception of language interact with their place-based identities. Here, place-based identities refer to speakers' connection with different places, which could be represented as their attitudes towards or orientation to these places. To this end, I focus on college students from Xiamen, a city in Southern China, who moved to Beijing, the national capital in Northern China, and investigate their use of Xiamen Mandarin (first dialect) and Northern Mandarin (second dialect). Two studies were conducted to examine both the stylistic variation (audience-based shift, and place-based topic shift) in dialect use, as well as social perception of dialect users. The study compares the effects of three linguistic variables that differentiate the two Mandarin varieties: the /s/-/ʂ/ contrast, neutral tone, and /w/->[ʊ].

In this chapter, I begin with the discussion of factors that influence the use of second dialect by geographically mobile speakers. In Section 1.2, I review the literature on how language is connected to place-based identities. The research on social meaning is also discussed as it provides a useful theoretical framework for expanding the scope of second dialect acquisition research. What follows is a discussion of existing work on stylistic variation and social perception as they relate to second dialect acquisition. Lastly, I lay out the goals of this dissertation.

1.1 Second Dialect Studies

Research on the acquisition and use of second dialect (D2) examines a situation where speakers acquire and use a D2 that is considered to be a dialect of their native language (Siegel, 2010). It is a well-known issue in linguistics that distinguishing between a language and a dialect can be difficult, and that linguistic characteristics alone are often not sufficient for making such distinction. Political and cultural factors, for example, can play a crucial role in distinguishing one from the other. That is what why the mutually intelligible Danish and Norwegian are considered separate language, yet Cantonese and Mandarin, which are mutually unintelligible, are treated as dialects of Chinese.

However, in the existing literature, research in D2 differs from other type of D2 acquisition work in that, in the former case, the linguistic varieties involved are often mutually intelligible (Siegel, 2010). The target of D2 acquisition includes both regional dialects and social dialects. In addition, the acquisition can occur naturalistic or educational contexts. The types of dialects and the contexts of acquisition can have considerable impact on the outcome of D2 acquisition. In the context of this dissertation, I investigate the acquisition of D2 features by geographically mobile speakers who have moved to a community where D2 is the dominant variety. Therefore, I would first like to review how this type of D2 acquisition has been examined in the existing research.

One of the key factor that influences the D2 production of mobile speakers is age-of-arrival. Studies that have examined SDA across different age groups in the same community showed that children and adolescents usually exhibit higher level of D2 acquisition than adults [1] (Bortoni-Ricardo, 1985; Kerswill, 1994) and that younger children were more likely to acquire D2 features than older children (Chambers, 2002; Kerswill, 1994; Payne, 1976, 1980). Synthesizing the results from previous research, Siegel (2010) concluded that the cut-off age for native-like SDA differs depending on the type of linguistic features involved:

[1] However, in Wells' (1984) study on Jamaican English speakers' acquisition of London English, age-of-arrival was not significant for all of the 16 variables tested.

seven or younger for phonological features (Chambers, 1992; Payne, 1976, 1980; Tagliamonte & Molfenter, 2007), and 16 or younger for morphological features.

Unlike successful child learners of D2, especially those who arrive at the D2-speaking community before the cut-off age, adult D2 learners' speech often contains forms that are intermediate between their first dialect (D1) and their D2. As a result, they often speak "fudged dialects" (Chambers & Trudgill, 1980), which are often considered foreign by native speakers of both their D1 and D2 (B. Evans, 2004; Munro, Derwing, & Flege, 1999). Additionally, there is often much inter-speaker and intra-speaker variation in terms of the degree of D2 use - the percentage of attainment for the same D2 can range from 0% to 100% across speakers (Siegel, 2010). SDA studies have explored multiple factors that have lead to the variation among adult speakers. In this section, I will discuss some factors that have shown to affect SDA use overall.

1.1.1 Length of residence

One of the most commonly examined extra-linguistic factors for SDA is the length of residence (LoR) in the D2-speaking community (B. G. Evans & Iverson, 2007; Foreman, 2003; Ivars, 1994; S.-W. Liao, 2010; Nycz, 2013a; Omdal, 1994; Sharma, 2005; Shocky, 1984; Stanford, 2007; Walker, 2014). Since longer residence in the D2-speaking community likely results in more exposure to D2, it is often hypothesized that D2 learners who had longer LoR would use more D2 features. However, previous studies showed mixed results in terms of how length of residence affects D2 attainment.

Evans and Iverson (2007) found an effect of LoR in their study examining Northern England English speakers who attended universities in different parts of the country. They conducted a longitudinal production study that recorded each participant four times from before beginning university to after the sophomore year, and found statistically significant change towards Standard Southern England English, the prestige English accent, for the

vowels in *bud*, *cud*, *could* and *bath*. Similarly, Walker (2014) found that for British expatriates living in the United States, the longer their LoR, the more likely it was for them to flap their intervocalic /t/, suggesting a more American-English-like production. Liao (2010) examined the use of Tone 4 raising, a linguistic feature in the Taichung variety of Taiwan Mandarin, among Taichung speakers who had moved to Taipei after high school. She found that those who had been in Taipei for 2 to 4 years were more likely to use Tone 4 raising than those who had been in Taipei for more than 7 years. In several other studies (Ivars, 1994; Nycz, 2013b), the LoR effect was in the expected direction, although the factor did not test significant.

In contrast, the effect of LoR is not quite as prominent in other studies (Foreman, 2003; Stanford, 2007). In the study on the exogamous Sui clan, Stanford (2007) found almost no D2 attainment except for one speaker who had been in the D2-speaking community for 40 years. However, two other speakers who had a long LoR of 35 and 43 years also did not use D2 features. In Foreman's (2003) study on Northern American expatriates in Australia, two participants showed no use of D2 variants for all of the six variables after living in Australia for 25 years.

1.1.2 Social interaction

While length of residence is often positively correlated to the amount of exposure to D2, it is not always the case depending on how integrated the relocated speakers are into the native D2-speaking community. Therefore, in order to further examine the effect of D2 exposure on SDA, other studies have investigated closely the patterns of interaction between the relocated speakers and their D1- and D2-speaking interlocutors. A theoretical framework that is often used in quantifying such interactions is the social network (Boissevain, 1974; Milroy, 1980). Social networks refer to the webs of ties between individuals. Different social networks may differ in the number of ties involved (density), how regularly the ties

in the same network interact with each other (openness), and in the number of separate connections between the two actors (multiplexity).

According to Milroy, "a dense, multiplex network structure predicts relative closeness to vernacular norms (1980, p. 160)". In the context of SDA, it would predict that speakers with a dense, multiplex network from their D1 community are more likely to use D1 variants, a hypothesis that has been corroborated by several studies (Bortoni-Ricardo, 1985; B. Evans, 2004; Hiramoto, 2010; Kerswill, 1994).

For example, Evans (2004) examined 28 Appalachian speakers who moved to Michigan in terms of their acquisition of raised /æ/, a Northern American English variant. She calculated an Appalachian integration score, which took into account speakers' percentage of Appalachian friends, and the density and multiplexity of the networks. The statistical results revealed that the higher the Appalachian integration score, namely, the more closely related the speaker was to the D1-speaking community, the less likely for them to produce a raised /æ/. Kerswill' s (1994) study also examined the social network of the participants based on their frequency of visits to rural D1 (Stril) community, the geographic origins of their family members, and their contact at work and in D1-related organizations in the D2 community. He found a similar pattern that those who had higher network score, namely, more interaction with other Stril speakers, had lower uses of Bergen morpholexical features. Hiramoto's (2010) work on the acquisition of D2 features among Tôhoku Japanese immigrants in Hawai'i also showed an effect of social interaction, although the social network framework was not used in the study. Tôhoku speakers who had daily interaction with non-Tôhoku speakers used more morphosyntactic features in Chûgoku dialect, the dominant Japanese dialect in Hawai'i, than those who did not have such interaction. It is worth noting, however, that despite the high degree of use of D2 morphosyntactic features, there is clear evidence of D1 transfer in the phonology.

1.1.3 Identity and attitudes

The discussion so far has suggested that greater exposure to D2 can facilitate the use of D2 variants. (B. G. Evans & Iverson, 2007; Hiramoto, 2010; S.-W. Liao, 2010; Walker, 2014). However, it is not necessarily the case that heavy D2 exposure guarantees a high degree of D2 use. After all, D2 speakers are not passive recipients of the ambient linguistic input. In fact, cases have been observed where relocated speakers had very low degree of D2 use despite having resided in the D2-speaking community for decades (Foreman, 2003; Stanford, 2007). Carmichael's (2017) work on speakers from Chalmette, a suburb in New Orleans, who relocated to other places in Greater New Orleans in the wake of Hurricane Katrina, presents an excellent example of how exposure alone does not guarantee a change in language production. The study focuses on r-lessness, the most salient feature of Chalmatian English among the community members. In order to examine the effect of movement on the degree of rhoticity, the study included speakers with different location status at the time of the interview: the returners, who came back to Chalmette after a period of relocation, and the relocators, who still resided somewhere outside Chalmette. Since the relocators likely had more exposure to the linguistic norm outside Chalmette compared to the returners, if we hypothesize that greater exposure lead to more D2-like production, we would expect to see that relocators have more D2-like production than the returners. In addition, it also investigated how speakers' place-based identities affect r-lessness by the use of an extra-Chalmatian orientation score, a measure that captures the participants' stance towards places outside Chalmette. The statistical analysis showed that while location status is not a significant predictor of r-lessness, the extra-Chalmatian orientation score is: speakers who are more oriented towards places outside Chalmette are more likely to be r-ful. The lack of exposure effect in these studies (Carmichael, 2017; Foreman, 2003; Stanford, 2007) suggests that the level of D2 acquisition and use is not simply a function of the amount of linguistic input available to the D2 learners. Rather, it would be more reasonable to also take into account the role of speaker agency in D2 acquisition and use.

In D2 acquisition research, this effect of speaker agency is often examined through how speakers' placed-based identity or their attitudes towards the dialects and dialect-speaking communities affect their use of D1 and D2 features. A common hypothesis about how identity and attitudes motivate SDA is that if one identifies strongly with the D2-speaking community or has positive attitudes towards D2, it is more likely for them to use D2 variants. Similarly, if one identifies strongly with a D1-speaking community or has positive attitudes towards D1, it is more likely for them to maintain D1 variants, and thus use fewer D2 variants. The validity of these two hypotheses are corroborated by many studies (Carmichael, 2017; Drummond, 2012; Foreman, 2003; Ivars, 1994; Kerswill, 1994; Sharma, 2005; Walker, 2014) albeit their methodological differences in the measurement of identity and/or attitudes. [2].

Walker (2014) found that among her American subjects living in the U.K., those that had more positive attitudes towards life in the U.K. were more likely to have less rhotic, more British English-like production in a reading task. However, it is worth noting that a similar kind of attitudinal effect did not occur for English expatriates living in the U.S. for rhoticity. This asymmetry in the effect of attitude could in part result from the difference in the relative prestige of the two linguistic varieties in the respective D2 communities: British English has more prestige in the U.S. than American English has prestige in the U.K. This asymmetry of prestige is echoed in the metalinguistic commentary from both American and English subjects. In addition, such attitudinal effect was also not found in two of the variables examined in the study that distinguished the two English varieties: BATH and intervocalic /t/. Sharma (2005) investigated Indian English speakers who moved to San Francisco in terms of their acquisition of American English features, and found that the factor of attitudes towards US cultural contact were positively correlated with the use

[2]However, the identity/attitudes effect was not significant in Omdal's (1994) work on the language attitudes and language modification of speakers who moved from the valley of Setesdal to the city of Kristiansand in Norway or Bigham's (2008) study on the acquisition of Southern Illinois English by college students originally from outside Southern Illinois)

of the American variant for all three phonological features (aspiration, *l*-velarization and rhoticity).

Other studies focused on the attitudes towards/identification with the D1 culture. Kerswill (1994) showed that among Stril speakers living in Bergen, those with more positive attitudes towards their home dialect were more likely to use more lexical and morphosyntactic features from their D1 than the D2. Stanford (2007) also highlighted the importance of D1 identity in explaining the overall lack of SDA among Sui women who moved to a different clan due to marriage. He argued that since Sui people strongly identify with their father's clan and that clan membership is marked linguistically with their D1, the maintenance of D1 in a new community could be taken as an act of identity (Le Page & Tabouret-Keller, 1985) to express their respect for their clan.

So far, I have discussed attitude and orientation more or less as a binary choice between being associated with the D1- or D2-speaking communities. However, qualitative commentary from relocated speakers provide some evidence that the identification with one dialect-speaking community does not preclude the connection with the other. In Foreman's work on American and Canadian migrants in Australia, many of the participants were "unsure of their identity or uncomfortable with this topic" (2003, p. 235). Of the 12 speakers who did use some Australian English feature, eight reported that they had a partially Australian identity, and two claimed that they did not have any national identity. When Ivars inquired of her participants whether they identified more with the D1 (Närpes) or D2 (Eskilstuna) culture, many of them said "both" or "half and half" (1994, p. 221).

Anderson and Thelander's (1994) work provides further evidence that the connection with one's D1 community and the integration into the D2-speaking community can have a complex effect on the use of different dialect features. The study focused on migrants from rural areas in Northern Sweden who moved to the urban region of Eskilstuna in Southern Sweden. In this case, the D1 was the Northern dialect, and the D2s were the Southern dialect as well as the Received standard dialect. One hundred and twenty participants were

categorized into four groups based on two criteria: context continuity and the integration into the new community. Specifically, context continuity is a measure of how well the migrants maintain contact with people from their linguistic and social past, and integration into the new community measures the degree of social interactions with the D2-speaking communities as well as their willingness to settle in the community. The study calculated an average percentage for the use of Northern, Southern, and Received standard dialect for each group based on self-reported use of three phonological variables. Speakers with high context continuity and strong integration into the new community had a high percentage of Northern (71%) and Southern dialect use (50%), and the lowest percentage of standard dialect use (32%). In contrast, speakers with low context continuity and weak integration into the new community have very low use of the Northern (12%) and Southern (12%) variants, but a high percentage of use for the Received standard variants (63%). These results show that continued contact with ties from home does not preclude integration into the new community. More importantly, it suggests that these two social factors are associated with different dialects: context continuity is more likely to affect the use of Northern vs. Received standard dialect, while the integration into the new community is closely related to the use of Southern features. Anderson and Thelander's (1994) study not only points to the fact that migrants' relationships with D1- and D2-speaking communities are not mutually exclusive, but also suggests that different linguistic resources can correspond to identities connected to different places.

In sum, several social factors have been shown to have an effect on D2 use: length of residence, social network, and speaker identity and attitudes. The first two factors reflect more or less the amount of D2 exposure that the D2 learners receive, whereas the last factor focuses mainly on the role of attitude. While more and more SDA studies have started to measure speakers' place-based identities or orientation in the analysis, much work focuses on the speakers' attitudes towards either the D1- or the D2-speaking community. Some

other studies incorporate both aspects into one measure of place-based identity. However, as illustrated by the speaker commentary discussed above (Foreman, 2003; Ivars, 1994), mobile speakers are in a position to negotiate their ties with both their home community and the new locale. Such identity work rarely results in the preference for one community over another at all times. Rather, the place-based identities of migrants can be more fluid. More importantly, the different linguistic resources that are available to the migrants can be associated with their different place-based identities (Andersson & Thelander, 1994). Therefore, in order to develop a more nuanced understanding of how speaker agency affects D2 use, it is important to be able to examine 1) how the mobile speakers identify with both their home community and the new locale separately, and 2) how the different D1 and D2 varieties map on to the different place-based identities. In order to answer these questions, it is helpful to turn to some existing sociolinguistics literature that has highlights the role of place in understanding language variation.

1.2 Language and Place

In much of the SDA research discussed above, the main concern has been the degree of dialect acquisition. The different linguistic and social factors are often presented as constraints on speakers' ability to fully acquire a second dialect. However, when people move to a different location, the acquisition of dialect is not an independent process. Rather, it is a part of a larger project of establishing one's life in a place with different sociolinguistic norms and dynamics. Therefore, an alternative to understanding language variation in the context of migration is to examine the role language plays in placing the speakers into the new sociolinguistic landscape (Eckert, 2012).

Previous research has analyzed different ways that language and geographic mobility interact. To begin with, geographically mobile listeners have been shown to have better dialect perception than non-mobile listeners (Clopper & Pisoni, 2004, 2006; B. Evans, 2004;

Williams, Garrett, & Coupland, 1999). For example, Clopper and Pisoni (2004) investigated the effect of listener residential history on dialect perception in a forced-choice categorization task. They found that listeners who had lived in at least three different states performed better than those who had lived only in Indiana, and that the two listeners group had significantly different perceptual similarity spaces.

Furthermore, geographic mobility can serve to heighten speakers' awareness of the distinctiveness of their own dialects. Johnstone and Baumgardt's (Johnstone, 2013; Johnstone & Baumgardt, 2004) work on the discursive construction of Pittsburghese, the dialect of Pittsburgh, on an online discussion forum allows us see this process in action. Of the 101 contributers to the online forum dedicated to the discussion of Pittsburghese, approximately half were originally from Pittsburgh but now live elsewhere. Many of the relocators shared stories of how their regional linguistic forums were corrected or ridiculed, or how people recognized their place of origin based on their accent. Excerpt 1, for example, illustrated how Molly G. came to the understanding that "needs ironed" was a regional feature through interaction with her roommates in college. In another study, Johnstone and colleges (2006) examined how the increasing geographic mobility in the later half of the twentieth century substantially contributed to the "enregisterment" (Agha, 2003) of Pittsburghese.

> ***Molly G***. *She said, " Well, it either 'needs ironing' , or it 'needs to be ironed." And it never occurred to me ... I had never been corrected all the way through school even though we stuttered studied grammar and everything else that ..."*
> *(Johnstone 2013, p. 134)* (1)

Along with the exposure to different linguistic norms, contact with outside groups can also lead to the exposure to different language ideologies. Research in perceptual dialectology (Niedzielski & Preston, 2000; Preston, 1989) has shown that the same dialect can be associated with different social qualities across different dialect regions. In a task in which respondents from southeastern Michigan, southern Indiana, and Southern states rated all the U.S. dialects in terms of correctness and pleasantness based on their impression, Niedzielski

and Preston (2000) found a drastic difference in how Southern and Michigan speakers evaluate their own and each other's dialects. In terms of correctness, the Michigan respondents rated their own dialect as the most correct of all U.S. dialects (8.00-8.99 on a nine-point scale), whereas the Southern participants only gave a modest rating (5.00-5.99) to Michigan English. Regarding pleasantness, while Southern participants gave Alabama the highest rating for this trait, Michigan participants rated Alabama as the least pleasant-sounding. Given these contrasting social perceptions of Michigan and Alabama English, Southerners who relocated to Michigan may need to position themselves in a sociolinguistic landscape that is different from the one that they are familiar with. Although not all relocated speakers will encounter language attitudes that are quite as divergent from their own, it is not uncommon for them to develop a new outlook on their D1 and D2. For example, another Pittsburgh speaker from Johnstone' s (2013) work commented on how the experience of relocation changed their way of thinking about their own dialect. In Excerpt 2, the Pittsburgh speaker developed more positive attitudes towards Pittsburghese (as represented by its dialect feature "yunz") after contact with with Southern American English speakers (as represented by its dialect feature "y' all") who took pride in using the Southern dialect.

> *I live in Georgia, the land of "y' all" . Why not try living among the "y' allers" for a few years. You' ll appreciate the "yunz" a little more.* (2)
> *(Johnstone 2013, p. 122)*

In addition to the differing social perception of the regional dialects, people may not hold similar attitudes towards the same place either. Drawing on the humanistic geography literature, an emerging line of research on language and place views place not only as the objective and physical traits of a location, but also "the meaningful context of human action" (Entrikin, 1991, p. 10) that is socially constructed. Specifically, this literature has focused on how speakers use linguistic practices to claim their place-based identities (Becker, 2009; Grieser, 2015; Johnstone & Kiesling, 2008; S. Lee, 2016; Modan, 2007; Nylund, 2013). Al-

though much of the research focuses on non-mobile speakers, most places or neighborhoods analyzed in these studies are undergoing demographic changes, often as a result of gentrification. Therefore, in these cases, positioning oneself in relation to a place often involves a differentiation between oneself and the newcomers. Several studies (Grieser, 2015; S. Lee, 2016; Modan, 2007; Nylund, 2013) approach such identity work of differentiation through discourse analysis, with a focus on how speakers claim an "authentic" membership of the community by positioning themselves against those who have different views on crucial issues within the community. Becker's (2009) work, on the other hand, takes a quantitative approach to understand how the local linguistic feature is used in such construction of place-based identity. The study examined senior working class white residents in the Lower East Side of New York City, where gentrification had led to a massive influx of middle class non-white residents. The analysis found that when talking about issues related to the neighborhood, they were significantly more likely to be r-less, a stereotypical feature of New York City English, than when talking about non-neighborhood topics. This stylistic use of the non-rhotic /r/ is interpreted as a way of authenticating their identity as true Lower East Siders, in contrast to the newcomers who are often ethnic minorities and non-users of New York City English.

In short, contact with speakers from other speech communities can heighten one's awareness regarding the distinctiveness of their own dialect, which can lead to a stronger link between the regional linguistic features and their identity in relation to their home community. When different views towards the same place emerge in the community, these regional linguistic features become an important means to display speakers' connection to the place and authenticate their membership in the place. As Becker's (2009) work has shown, an examination of speakers' use of regional linguistic features in a context where "place" is foregrounded can be useful in understanding the role that language plays in situating the speakers in the contested ground of "place". Such a stylistic approach is particularly ben-

eficial in the analysis of place-based identities among geographically mobile speakers. As discussed in Section 1.1.3, mobile speakers often have to negotiate their ties to both their hometown and the place that they currently reside in, and that they may associate these ties with different linguistic varieties and features. Therefore, it is crucial to examine the linguistic construction of their identities in relation to each of the two places. Just like how the examination of language use in neighborhood vs. non-neighborhood topics can offer some insight into what linguistic features are ideologically-linked to an authentic Lower East Side identity, a comparison of speakers' linguistic behaviors when different places (i.e. home community vs. the new locale) are foregrounded in the communication can shed light to the linguistic resources are linked to these places.

While the investigation of what linguistic features are used when different places are foregrounded is a crucial step to understanding mobile speakers' linguistic construction of their place-based identities, production data alone cannot provide a full picture of what kinds of social qualities are attributed to each place through language use. After all, as shown by perceptual dialectology research, different speakers can have different social perception of the same dialect. Without an understanding of whether speakers perceive a given linguistic variety/feature as non-standard or friendly, it is difficult to determine what social qualities they associate the place with when they use the variety/feature.

1.3 Social meaning

One of the first studies that touch upon the social meaning of language variation in the variationist literature is Labov's (1963) seminal work on Martha's Vineyard. The study found a significant difference in the rate of /ay/ centralization, a local variant, among between two groups of speakers who had different views on the emerging tourism industry on the island. While there was a general tendency to move towards the mainland trend in lowering the nucleus to [a] on Martha's Vineyard, speakers who preferred a traditional

fishermen's lifestyle over the tourist development reversed this trend in order to claim an authentic islander identity.

Although the field quickly turned to the investigation of the large-scale social stratification of language in the decades that follow, a new strand of literature, dubbed by Eckert (2012) as the "third-wave" sociolinguistics, is now revisiting social meaning as an important feature of language. Drawing on the linguistic anthropology literature, "third-wave" studies focus on "the linguistic practice in which speakers place themselves in the social landscape through stylistic practice" (Eckert, 2012, p. 94). This view requires the conceptualization of a link between language variation and certain aspects of the social world that speakers can recognize and/or make use of. An important characteristic of such a link is that the indexical meaning of language variation is flexible instead of static. In other words, the same linguistic form does not always index the same kind of social information. Therefore, it becomes crucial to understand how the different social meanings come to be associated with a given linguistic feature. A theoretical framework that accounts for such a process is the orders of indexicality (Silverstein, 2003). According to Silverstein (2003), the interpretive process of indexical meaning begins with the correlation between the linguistic forms and the context it is normatively used, which can be called the n-th order indexicality. Simultaneously, there is also an n+1st order indexicality, which is "always already immanent as a competing structure of values potentially indexed in-and-by a communicative form of the n-th order, depending on the degree of intensity of ideologization" (Silverstein, 2003, p. 194).

Furthering this conceptualization of indexicality, Eckert (2008) argues that the social meaning of a variable at a particular time forms an indexical field consisting of ideologically-linked meanings, and the specific meanings invoked may differ across contexts. Drawing on several studies that have examined the social meaning of an aspirated intervocalic /t/ in different communities of practice (Lave & Wenger, 1991) in the United States, Eckert argues that although the particular indexical meanings of /t/ release depend on the context of use,

all of them are ideologically linked to the idea of hyperarticulation. For example, the /t/ release indexes British English for "geek" girls (Bucholtz, 2010), Yiddish for Orthodox Jews (S. Benor, 2001), and schoolteacher talk for gay men (Podesva, Roberts, & Campbell-Kibler, 2002).

While ethnographically-informed production studies (Kiesling, 1998; Moore & Podesva, 2009; Podesva, 2007; Q. Zhang, 2005) have revealed how speakers make use of existing linguistic resources to construct identities or convey social information in a given context, this line of research alone only provides a partial picture of the indexical meaning of language variation. After all, while in theory speakers can exert their linguistic creativity considerably, the successful communication of the intended indexical meaning is contingent on listeners' interpretation. Therefore, it is crucial to understand how listeners perceive the social meaning of language variation.

The results of social perception studies support the view that the social meanings of linguistic forms are flexible and context-dependent (Campbell-Kibler, 2007, 2009, 2011; Fridland, Bartlett, & Kreuz, 2004; Labov et al., 2011; Levon, 2014; Pharao, Maegaard, Møller, & Kristiansen, 2014; Plichta & Preston, 2005). Campbell-Kibler's (2009) study of the social perception of the alveolar and velar variants of (ING) showed that listeners' evaluations of the two variants differ depending on the perceived socioeconomic background of the talkers. For example, only when the talkers were perceived as working-class did the use of the velar variant evoked the social percept of educated or intelligent; for those who were not heard as working-class, (ING) did not affect the ratings on this attribute. In addition to the social context, the social meaning of an individual variable also interacts with that of the other linguistic variables present in the interaction. Pharao and colleges (2014) found that the social perception of the variation between the alveolar and fronted /s/ in Danish differs depending on the broader registers they appear in. When heard in "modern Copenhagen speech", the fronted /s/ indexes femininity and gayness, whereas when heard in "street language", a register that is often associated with male adolescents from a

minority background, the /s/ variation does not have an effect on femininity ratings.

The literature on social meaning has shown that, in some communities, speakers have been observed to employ locally-relevant linguistic styles to evoke certain social meanings in order to situate themselves in the sociolinguistic landscape. There is also evidence that listeners are sensitive to social meaning attached to language variation, and that the interpretation of social meaning for one type of linguistic variation is influenced by the co-occurring cues in the linguistic and social environment. These findings on stylistic variation and social perception show that these two aspects of the cognitive system are sensitive to the immediate sociolinguistic environment. Therefore, they could be useful tools to investigate the relationship between second dialect use and place-based identities for mobile speakers. In Section 4 and 5, I will discuss existing work that can shed light on how stylistic variation and social perception have been examined in D2 acquisition.

1.4 Stylistic Variation in Second Dialect Acquisition

Stylistic variation has been one of the central concerns in variationist sociolinguistics since its inception. Several models have been put forth to explain the motivation of intra-speaker style shifting, including Attention to Speech (Labov, 1972), Audience Design (Bell, 1984), and Speaker Design (Coupland, 2007; Schilling-Estes, 2002). Despite the considerable interest in stylistic variation in the scholarship on sociolects, much D2 research remains "a-stylistic" (Nycz, 2015, p. 478), and prioritizes the description of how successful the learners are at acquiring the D2. However, there is a small body of work that includes a comparison of D2 speech in different styles, and has contributed to our understanding of how variable D2 forms are, and how the use of D1 and D2 is related to speakers' place-based identities.

Several studies adopt the Labovian Attention to Speech paradigm and compare speakers' use of D2 features in interview speech with the more controlled read speech (Carmichael, 2017; Johnson & Nycz, 2015; S.-W. Liao, 2010). For sociolects, the Attention to Speech

model predicts that when speakers are paying more attention to speech, they are more likely to use variants that are associated with more social prestige. This prediction is corroborated in the context of D2 use. For example, Carmichael (2014) found that Chalmetian speakers, whose native dialect was non-rhotic, were most likely to be r-ful in the wordlist, less so in the reading passage, and the least in the interview. Due to the relocation to other regions in the Greater New Orleans area, Chalmetian speakers were exposed to speakers who had higher rate of the prestigious, r-ful use. Similarly, Liao (2010) found that for Tone 4 Raising and /r/-lateralization, Taichung speakers who moved to Taipei, where a more prestigious Mandarin variety is spoken, were more likely to use their D1 variant in the casual conversation than in the reading passage. Johnson and Nycz (2015), on the other hand, found that Canadian English speakers in New York City, were more likely to exhibit LOT-THOUGHT merger, a feature associated with their D1, in minimal pair reading than in conversation. This result is different from the other two studies in that D1 variants are used more often in careful speech than in casual speech. Nonetheless, it is worth noting that for Canadian speakers, New York City English is likely not more prestigious than their D1, considering that New York City English often receives negative evaluations among speakers from other parts of the U.S (Niedzielski & Preston, 2000). Therefore, it is likely the case that geographically mobile speakers tend to use the more prestigious variant in a more formal speech style, be it their D1 or D2.

While an analysis of stylistic variation across different levels of formality can broaden our knowledge of intra-speaker variation in D2, it does not directly engage with how speakers construct their place-based identity linguistically. In the following section, I will talk about studies on stylistic variation in which "place", in the sense of the regional background of speaker, or the topic of the conversation, was specifically highlighted during the course of the interaction.

1.4.1 Audience design and second dialect acquisition

In response to the Labovian model, which has been criticized for its assumption that more attention to speech necessarily leads to the adjustment towards socially prestigious linguistic features (Coupland, 2007; Eckert & Rickford, 2001), Bell (1984) put forward the Audience Design model, which drew on Speech Accommodation Theory (Giles, 1973; Giles & Powesland, 1975). According to the Audience Design model, "speakers design their style primarily for and in response to their audience" (Bell, 2001, p. 143). Research has shown that speakers shift their linguistic production in the direction of their interlocutors Coupland (2007). One of the most well-known cases of Audience Design is Rickford and McNair-Knox' s (1994) analysis on Foxy Boston, an African American girl who were interviewed by speakers of different ethnolects. They found that the girl used much more African American Vernacular English features (-s absence, copula absence, habitual *be*) when interviewed by an African American speaker than when interviewed by a European American speaker.

This interpretation of speakers' language use with different interlocutors is contingent on the assumption that speakers have some control in style-shifting. Current sociolinguistic models have not reached consensus on this issue. Bell (1984; 2001), as cited above, suggests that audience-based stylistic variation is mostly responsive in nature. While he does also recognize some initiative style-shifting, intra-speaker variation between topics and settings, for example, are still considered essentially reactive to the audience dimension. In contrast, the Speaker Design approach views stylistic variation as "a resource in the active creation, presentation, and recreation of speaker identity" (Schilling-Estes, 2002, p. 388). Grounded in the social constructionist tradition, this approach places a premium on speaker agency in the analysis of stylistic variation. For example, Podesva's (2007) study on the cross-situational variation in fundamental frequency (f0) of Heath, a gay medical student, focuses on how his style-shifting constructs different personal identities in different situations. The analysis found that when talking to close friends, Heath's falsetto was longer, higher, and wider in range, than when he was talking to his patient. Podesva argues that such F0

variation indexes an expressive meaning that helps to construct a diva persona.

The role of social factors in accommodation has also been explored in an experimental setting (Babel, 2010, 2012; Balcetis & Dale, 2005; Dijksterhuis & Bargh, 2001; Pickering & Garrod, 2004; Weatherholtz, Campbell-Kibler, & Jaeger, 2014). Several recent studies on phonetic (Babel, 2010, 2012) and syntactic accommodation (Balcetis & Dale, 2005; Weatherholtz et al., 2014) support a model which suggests that accommodation is automatic, but social factors can inhibit or facilitate the degree of accommodation (Dijksterhuis & Bargh, 2001). For example, Babel (2010) found that New Zealand speakers who showed a pro-Australia bias in an Implicit Association Task were more likely to accommodate to the vowels of an Australian talker. Given these findings on the impact of social factors on accommodation in the naturalistic as well as experimental settings, it is reasonable to suggest that an examination of D2 speakers' stylistic variation when talking to speakers from the D1 and D2 communities can shed light on the linguistic construction of their place-based identities.

I am aware of three D2 studies that have examined the effect of the regional background of the audience on the use of D2 variants (Foreman, 2000; Rampton, 2013; Sharma, 2018), and found conflicting evidence regarding this effect. Foreman (2000) examined the production of post-vocalic /r/, /ɪ/, and /o/ by six North American English speakers who relocated to Australia. All speakers participated in an interview in which the first half was conducted by a female Canadian English speaker and the second half was conducted a female Australian English speaker. Three participants in the study showed no sign of D2 use. Of those who did use Australian English variants, no significant differences were found between the two halves of the interview, indicating that the regional background of the interviewer did not have considerable impact on the use of D2 in this context.

Another study that includes a stylistic examination of the same speaker talking to interlocutors from different regional backgrounds is Rampton's (2013) work on a Punjabi English speaker, Mandeep, who moved to London in his late 20s. The study compared his

production across three situations: when talking with an Indian friend, when interviewed by an Indian English-speaking interviewer, and when conversing with a mixed group of white and Indian interlocutors at work. The analysis focused on his use of Punjabi English (D1), Standard British English (D2), and London English (D2) variants of four variables: /t/, post-vocalic /l/, FACE, and GOAT. Rampton (2013) found that for all variables, Mandeep used D1 variant most with the Indian friend (68.7%), less in the interview (41.7%), and least at work (4.4%). For Standard British English variants, he used them the most at work (92.2%), less in the interview (57.8%), and the least with the Indian friend (28.2%). He also used London English variants only during the interview and at work, although both to a small extent (below 10%). This result shows an expected effect of audience design - Mandeep shifts his use of D1 and D2 variants in accommodation to the interlocutors. However, although the regional background of the interlocutors did differ across the three contexts, there were other social difference between the contexts that might have led to the observed stylistic variation, for example, the formality of the conversation. In fact, Rampton also did not frame this study as one that illustrated the effect of audience design, but rather as a case of L2 stylization.

Sharma's (2018) work on the style shift of Indian-American media personality Fareed Zakaria has discussed how audience-design in the case of bidialectal speakers may differ from speakers of other linguistic and sociocultural profile. Using a novel methodology called Lectal Focusing in Interaction, Sharma was able to track how selected linguistic features converge during the interaction moment-to-moment. She analyzed Zakaria's use of Indian English and American English in two sets of TV shows: one with Indian audience, and the an American audience. Overall, Zakaria showed strong effect for audience in the expected direction: his use of American English variants were all higher than 60% in the three segments examined, but in shows with an Indian audience, the American English rate dropped to lower than 21%. Despite this powerful audience effect, he tended to shift to Indian English at moments when "his attention is otherwise diverted from a focus on speech

design, for example, when challenged, wrong-footed, or inserting a quick parenthetical" (2018, p.12). Sharma explained this observation in terms of *style dominance*, which suggests at moments when attentional load was heightened, bidialectal speakers might resort to the style that they first acquired for ease of processing. Aside from the pressure from attentional load, Sharma also found another factor that had favored the increase of Indian English for Zakaria, the one of *biographical indexicality*. This effect describes the situation in which when the bidialectal speaker knows which dialect is more native to them, and that this knowledge is shared with their audience, they could use the more-native dialect strategically to communicate a "real me" stance. These findings have provided evidence that the stylistic variation of second dialect speakers is subject to cognitive constraints, yet can also be employed and controlled at times.

Given the smaller scale of the three studies and their conflicting results, it is inconclusive whether the effect of audience design is consistent in D2 acquisition and use. However, it remains an interesting tool for exploring relocated speakers' linguistic construction of their place-based identities in relation to their home community and the new locale separately. By observing D2 speakers' language use in front of interlocutors from home vs. the new locale, we can obtain a glimpse of their negotiation between the different linguistic and sociolinguistic norms embodied by these interlocutors. The interlocutors serve as proxies for the two places in this stylistic comparison.

1.4.2 Topic-based variation and second dialect acquisition

In the Attention to Speech paradigm, the topic of conversation is seen an important way to distinguish between careful and casual speech. For example, Labov's Decision Tree (Labov, 2001) categorizes accounts of personal experience ("Narratives") as casual speech, and discussions about language ("Language") as careful speech. Therefore, the effect of topic is not examined independently. Bell acknowledges topic-based style-shifting, but suggests that it is derived from "underlying association of topics or settings with typical audience

members" (2001, p. 146). However, Rickford and McNair-Knox (1994) has shown that the degree of shift caused by topic was much larger than the degree of shift caused by addressee in the speech of Foxy Boston. A similar pattern was also found in Douglas-Cowie's (1978) work.

Much of the literature on topic-based style-shifting focuses on the variation between different sociolects (Eckert, 2000; Mendoza-Denton, Hay, & Jannedy, 2003; Rickford & McNair-Knox, 1994). With regard to how topic-based style-shifting relates to speakers' connection to "place", studies based on non-mobile speakers have found that when talking about issues related to the local community, speakers are most likely to use their vernacular speech, as opposed to when talking about non-place-specific topics (Becker, 2009; Blom, Gumperz, & Hymes, 1972). Love and Walker's (2013) study is among the first to examine topic-based stylistic variation in D2. It compared how talking about sports that are popular in England (British soccer) and the United States (American football) respectively affect the rhoticity of expatriate British English speakers living in the U.S. The analysis was based on interview data from nine Standard British English speakers who discussed their views of the two sports. The results showed an interaction between lexical stress and topic: for stressed syllables, the speakers were more likely to produce more non-rhotic, more Standard British English-like (D1) variants when talking about soccer than when talking about American football. Given the close sociocultural connection between the two sports and the respective dialect-speaking communities, this finding can be interpreted as the effect of talking about D1/D2 community on the use of D1/D2 features.

Similarly, Walker (2014) investigated the effect of place-based topic on the use of Standard British English vs. General American English among speakers who had different amounts of exposure to the two linguistic varieties. The study recruited three groups of speakers from the U.K. and the U.S. respectively: those who reported no experience with the other dialect, those who were fans of sports that were popular in the other country, and expatriates living in the other country. Three variables that differentiate the two varieties

were examined: rhoticity, intervocalic /t/, and BATH. The effect of topic was examined by comparing speaker' s production when reading a wordlist, which contained both English-themed and American-themed words. For these American and English expatriates, only rhoticity showed a significant topic effect: for both groups, when reading American-themed words, their production was more rhotic, thus more like Standard American English. Interestingly though, the effect of topic seemed to correlate negatively with experience: speakers with the least transatlantic experience showed more topic-based shifting. Walker (2014) also included some commentaries from the participants to illustrate the link between topic and linguistic varieties. Even though the production data was read speech obtained in an experimental setting, the participants did report thinking about pronunciations in different varieties as shown in excerpt 3.

> *"Because I said the American words, in my head, I could hear what an American accent would be. I said it in my normal accent. But in my head I can hear* ***superbowl****"*
> *(participant, 801, UK Control, bold indicates performed American accent)*
> *(Walker 2014, p. 124, emphasis in the original)* (3)

These two studies have shown that topic-based style-shifting can be observed even in read speech, indicating a strong connection between regional dialects and the place associated with these dialects. This patten suggests that a comparison of relocated speakers' language use when talking about D1- and D2-speaking region can reveal the linguistic resources that are used to construct their identities in relation to these places.

1.4.3 Social perception and second dialect acquisition

As discussed in Section 1.2, the examination of the social meaning associated with the relevant linguistic features is critical in the interpretation of relocated speakers' place-based identities. Since the social meaning of individual linguistic features has been shown to be context-sensitive (Campbell-Kibler, 2009; Pharao et al., 2014), it is important to make sure that the variables appear in the most relevant context. While so far we have assumed a

more or less clear-cut distinction between D1 and D2, in practice, the relocated speakers' linguistic performance is often perceived as an intermediate variety in between non-mobile D1 and D2 speakers (B. G. Evans & Iverson, 2007; Munro et al., 1999). Evans and Iverson (2007) asked six phonetically-trained listeners to rate speech samples of the 19 speakers recorded at four time points: before beginning university (T1), 3 months later (T2), after 1 year (T3) and after 2 years (T4). All speakers were recruited from the same town in northern England, and were attending universities across the country. Results for perceived accent rating showed that most speakers were rated as more southern-sounding (D2-sounding) in T4 than T1. Munro, Derwing and Flege (1999) conducted several experiments that investigated the perception of D2 speech by adult speakers who were born and raised in Canada until 18 and moved to Birmingham, Alabama. In all experiments, the D2 speech was presented with speech samples from two local speaker groups (i.e. locals in Alabama and Canada). Both Alabama and Canadian listeners rated the D2 speech somewhere in the middle of Alabama-sounding and Canadian-sounding scales respectively. Given this distinctness of relocated speakers' linguistic performance, I decided to compare the social meaning of mobile speakers' use of D1 and D2 variants, instead of that of native D1 and D2 speakers. This design allows me to develop an understanding of how the use of D1 and D2 by mobile speakers is perceived by those in the same community, and thus inform me on the interpretation of the stylistic shifts in the production study.

1.5 College students as mobile speakers

As discussed earlier, an important focus of the current dissertation is to investigate the role of speaker agency in D2 use. To this end, I have chosen to examine the language use and ideology of a population that is characterized by their considerable interest in identity exploration and intense contact with speakers outside their home community – college students. For many, college marks the first time that they move from their caregivers and begin

gradual transitions into their professional lives. As a result of the distinct characteristics of this life stage, it has been recently acknowledged as "emerging adulthood" (Arnett, 2000) [3]. In his seminal work on this issue, Arnett (2014) identifies five main features of this life stage: identity explorations, instability, self-focus, feeling in-between, and optimism. The presence of these features makes college students ideal candidates for the examination of how speakers' own beliefs about language and life in the new locale affect their stylistic practices.

Another important aspect of college life that pertains to D2 use is the common experience of sharing living space with peers. This form of intense and intimate contact with people who are likely from a different speech community can lead to considerable exposure to different linguistic norms, and even in some cases heightened awareness of the distinctiveness of one's own language use. Two longitudinal studies have showed that college students converged to the speech pattern of their peers, although the effect size tends to be small (B. G. Evans & Iverson, 2007; Pardo, Gibbons, Suppes, & Krauss, 2012). Pardo and colleagues (2012) examined four pairs of college roommates in New York and found significant convergence after 3.5 months of cohabitation as well as a positive correlation between phonetic convergence and the reported closeness to the roommate. Evans and Iverson (2007) focused on 19 speakers from Northern England who were enrolled in colleges away from home, and having contacts with speakers of Standard Southern British English, the accent of prestige in Britain. They recorded the speakers at four time intervals from before beginning college to the end of their second year, and found that majority of the participants sounded more southern in their last recording compared to their initial recordings. In addition to the accent rating, Evans and Iverson also conducted acoustic analysis of the vowel production in an effort to examine the correlation between production and per-

[3] It is worth noting that the concept of emerging adulthood applies not only to college students. Arnett defines it as "[lasting] from roughly age 18, when most young people finish secondary school, to age 25, when most people begin to move toward making communities that structure adult life: marriage (or a long-term partnership), parenthood, and a long-term job" (2014, p. 7).

ceived accent. Among all monophthongs, they only found longitudinal changes in F1 and F2 for BUD, CUD, COULD, and BATH, all of which are important features that mark the distinction between northern and southern English accents. Bigham (2010) also found that Southern Illinois college students, who have been in contact with their counterparts from Northern Illinois, patterned differently from high school students from Southern Illinois. He proposed that accommodation as such did not occur "through the wholesale adoption of new forms but rather through an expansion or reduction of the range of previously existing forms" (2010, p. 193).

Other sociolinguistic studies on emerging adults have explored how different post-high school trajectories affected speakers' language use, and particularly their participation in community changes (Prichard, 2016; Wagner, 2008, 2012). In a panel study of nine Philadelphia teens, Wagner (2008) found that overall the students' use of local features remained stable between their final year in high school and a year after, those who continued to advance the community change maintained a strong tie to the local social network. Additionally, the same group of speakers' production of the stable sociolinguistic variable ING was investigated for the potential phenomenon of age-grading, and an effect of post-high school trajectory was revealed: only those who enrolled in nationally oriented four-year colleges significantly reduced their use of the non-standard, alveolar variant.

Prichard's (2016) dissertation painted an even more complex picture of how different types of higher education affect college students' participation in the sound changes of their local community. Here, Prichard identified three college categories: national institutions that are highly selective, regional institutions that have greater than 50% acceptance rate and attract mostly in-state students, and local institutions that are public two-year colleges with exclusively in-state students. The analysis was conducted on existing corpora collected in Philadelphia and Raleigh, and the effect of college type differed for these two communities. In Philadelphia, students from national and regional institutions were retreating from the traditional local norms, while local institution students and high school speakers maintained

these features. In Raleigh, however, there was an overall retreat from the Southern Vowel Shift, and the nationally-oriented college students were only slightly ahead of the others in some cases. Prichard attributed this difference between the two locales to the contrasting prestige of the respective dialects: the southern accent has a more widespread negative stereotype than the Philadelphia accent.

From this existing literature on the sociolinguistics of college students, we can see that this population is likely exposed to three types of linguistic influences at this stage of life: the linguistic norms of their home/local community, the prestigious variety associated with educatedness, and the linguistic behaviors of their peers. The relative strength of these influences can be mediated by various factors including the strength of their ties to home and the new locale, the status of the higher education institutions, as well as the prestige of the linguistic varieties involved. Therefore, through the examination of linguistic behaviors of college students, we might be able to obtain some understanding of their negotiation among linguistic resources that are associated with different places and social standings.

1.6 This dissertation

The above review of existing research suggests that the effect of place-based identities, often represented as attitude or orientation, has been shown to affect D2 use (Carmichael, 2017; Drummond, 2012; Foreman, 2003; Ivars, 1994; Kerswill, 1994; Sharma, 2005; Walker, 2014). However, many studies only focus on mobile speakers' place-based identity in relation to D1- or D2-speaking communities, despite the fact that these connections are not mutually exclusive (Andersson & Thelander, 1994; Foreman, 2003; Ivars, 1994). Therefore, in order to examine how mobile speakers' connections to D1- and D2-speaking communities separately, this dissertation examined two sets of stylistic variation, both of which served to foreground the two dialect communities separately.

In addition, existing research on D2 and language and place has focused primarily on

how place-based identities are constructed in production. While this approach has been of much success, it would be beneficial to examine how D2 use is socially perceived, as the successful communication of place-based identities is contingent on listeners' interpretation. This dissertation complements the existing literature by the inclusion of a social perception study.

I focus on college students from Xiamen, a coastal city in Southern China, who are currently pursing higher education in Beijing, the national capital in Northern China. In this case, the D1 is Xiamen Mandarin, and the D2 is Northern Mandarin. The choice of this population is based on several considerations.

Specifically, I examine the stylistic variation in mobile Xiamen college students' use of Northern Mandarin in two ways. First, I compare their production when talking to a friend from Xiamen and when talking to a friend from Northern China. Second, I compare these speakers' production when reading a passage about Xiamen and when reading a passage about Beijing. In these two tasks, the regional background of the interlocutor and the place-based topics serve as surrogates for Xiamen and the North. This design allows me to understand what linguistic use are associated with the mobile speakers' connection to Xiamen and the North, respectively. In addition, I also investigate the social perception of the Xiamen and Northern Mandarin variants in the same community of mobile Xiamen college students. Particularly, I examined how the variants were with regard to the traits of status, solidarity, dynamism, and orientation towards Beijing.

In the following chapter, I will introduce the sociocultural background of this dissertation, particularly in terms of the relationship between language and place in the Chinese context. The linguistic variables are discussed in Chapter 3, and the methodology in Chapter 4. In Chapter 5, I report the results for the production studies, and in chapter 6, the findings for the social perception study. I present my discussion and conclusions for the research questions in Chapter 7.

Chapter 2

Sociolinguistic Background

2.1 Introduction

In this dissertation, I examine the interaction between mobile speakers' language use and ideologies and their place-based identities in a Chinese context. In China, the linguistic and cultural divide between the North and the South has been an important part of the country's mentality (Eberhard, 1965). Ever since the 1980s, China has been experiencing an unprecendented wave of internal migration from different parts of the country to metropolitan areas like Beijing, Shanghai, and Guangzhou. While much of the existing literature examines mobile population in the work force (Dong, 2011, 2016), this dissertation focuses on an underexplored population - mobile college students. Specifically, I investigate mobile college students in Beijing, the national capital in Northern China, who are from Xiamen, a city in the Southeast coast. Against the backdrop of the linguistic and cultural divide, these Southerners in the North are faced with different linguistic norms as well as sociolinguistic beliefs about their native dialect and the dialect in the new locale.

2.1.1 Xiamen

Marked by the blue dot on Figure 2.1, Xiamen is a port city located in Fujian province in southeastern China (marked in red on the map). As a part of the economic reform, it became one of the first four Specific Economic Zones in mainland China in 1980, and has been the more economically advanced region in the province. Xiamen consists of six districts as shown in Figure 2.2. The districts of Huli and Siming are located on the island

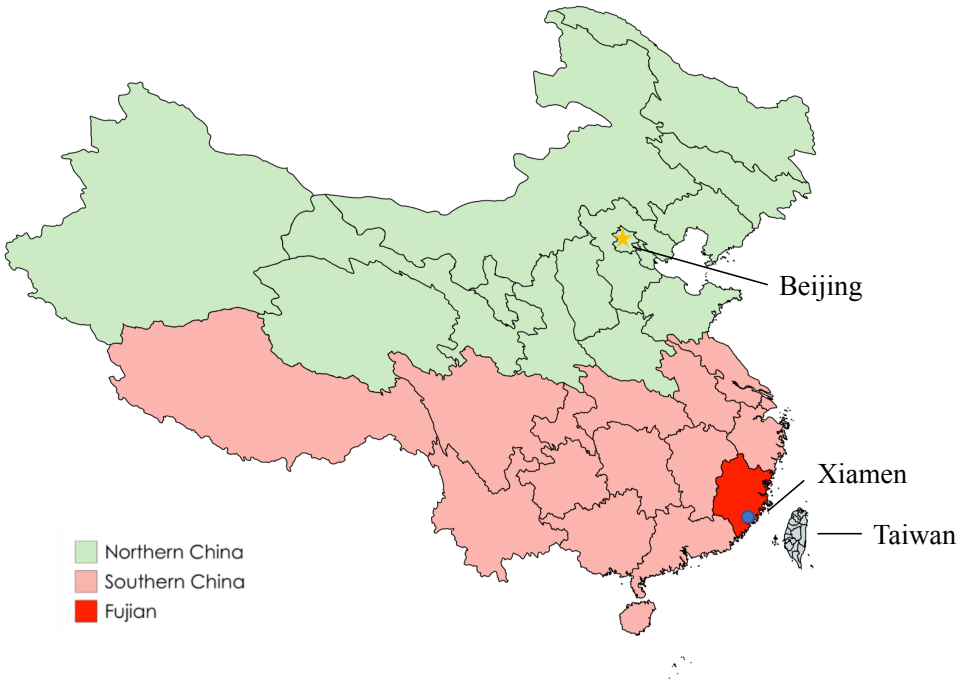


Figure 2.1: Northern and Southern provinces in mainland China and Taiwan

of Xiamen, and therefore referred to as *daonei* "inside the island". In contrast, the other four districts are part of the mainland and commonly known as *daowai* "outside the island". *Daonei* is the political and economic center of Xiamen, with an urbanization rate of 100% in 2016 (W. Lin & Ji, 2017). *Daowai* is traditionally considered rural, although in recent years it is quickly undergoing a wave of gentrification, leading to an urbanization rate of 91% and 87% for Haicang and Jimei respectively (W. Lin & Ji, 2017).

Xiamen is well-known for its mild climate and decent air quality, and is regarded as one of the most livable cities in China (Xinhua net, 2016). As a place of Western residence during the colonial period, Gulangyu, an island off the coast of Xiamen, is home to dozens of houses with Victorian-style architecture and has recently been listed as a UNESCO World Heritage Site (Kulangyu UNESCO World Cultural Heritage Site, 2017). These characteristics make Xiamen a popular tourist destination. In the first half of 2017, Xiamen received 35 million domestic and international tourists, becoming the third most popular tourism destination in China (China National Tourism Administration, 2017).

As is shown in Figure 2.1, Xiamen is one of the geographically closest cities to Taiwan in the Chinese mainland. It also bears strong cultural connections to Taiwan. Great waves of migration from Fujian to Taiwan took place in the 14th to 17th century, resulting in a large population of Fujianese descent in Taiwan (John C. Copper, n.d.). Linguistically, Taiwanese is mutually intelligible with Southern Min, the local linguistic variety in Xiamen. Even until this day, there are many cultural and economic exchanges between Xiamen and Taiwan.

In the remaining sections of this chapter, I provide some sociocultural background to this dissertation by focusing on the linguistic and cultural divide between the North and the South in China. Specifically, I discuss the linguistic features of Northern and Xiamen Mandarin as well as the social meanings associated with these two varieties and other related varieties including *Putonghua* and Taiwan Mandarin.

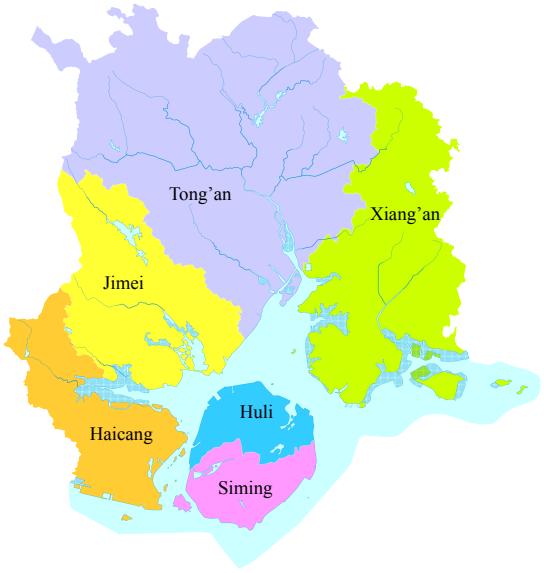


Figure 2.2: Districts in Xiamen, adapte occurredd from (Chk2011, 2013)

2.2 The North and the South

Traditionally, the mainland of China is conceptualized as the North and the South, separated by the Qin Mountains-Huai River line. Geographically, the North is an expanse of plain and plateau, whereas the South has more rugged landscape with numerous hills and valleys. Figure 2.1 shows the Northern provinces in light green, and Southern provinces in pink [1]. While the geographic border between the North and the South may still remain controversial, the sociocultural distinction is deeply rooted in Chinese history. For example, as early as in the Three Kingdoms Period (AD 220-280), there was a major political divide between the Wei State in the North and the Wu-Han alliance in the South. This North-South divide has remained culturally significant, and the discursive construction of this divide is still vibrant in all types of media. Widespread regional stereotypes exist for the North and the South in terms of physical traits, character traits, cuisine style, as well as language practices (Eberhard, 1965). Specifically, Northerners are often described as "tall,

[1] Although the Qin Mountains-Huai River line in fact cuts across provinces like Shandong, Henan, Anhui, and Jiangsu, in the popular understanding of the North-South distinction, the former two are often considered Northern provinces, and the latter ones are associated with the South, as reflected in Figure 2.1.

Figure 2.3: A linguistic map of mainland China and Taiwan

strong, honest and brave", whereas the Southerners are often associated with being "small, delicate, smart and gentle" (Eberhard, 1965, p. 601).

Linguistically, we see a remarkable difference between "a unified North and a fragmented South"(Ramsey, 1987, p. 22). The Chinese language consists of many mutually unintelligible *difang fangyan* or "regionalects" (DeFrancis, 1986). On Figure 2.3, the Chinese language is grouped under the Sino-Tibetan language family, and broken down into Mandarin and the Southern regionalects: Wu, Xiang, Gan, Hakka, Yue/Cantonese, and Min (Norman, 1988). Historically, these regionalects can be traced back to a single parent of Old Chinese. Therefore, although they have each undergone extensive sound changes, there remains a considerable amount of shared cognates.

Of the seven groups, Mandarin has the broadest geographic distribution, and is often divided into three linguistically distinct sub-regionalect groups: Northern Mandarin, Eastern Mandarin, and Southwestern Mandarin, as indicated in the yellow region in Figure 2.3. Northern Mandarin is the local variety in Heilongjiang, Jinlin, Liaoning, Beijing, Tianjin, Hebei, Shandong, Henan, Shanxi, Sha'anxi, Gansu, Ningxia, the majority of Xinjiang, and northern Anhui.

The other six regionalect groups are spoken in Southern China. As is shown in Figure 2.3, the boundaries for the southern regionalects often correspond roughly with the provincial boundaries. In fact, with the exception of Hakka, the names of the southern regionalects are the same as the abbreviations for the province where they are the dominant linguistic variety.

2.3 *Putonghua* and Regional Mandarin Varieties

As early as the Qing dynasty, the Mandarin variety in Beijing, the national capital, had acquired a prestigious status. Shortly after the establishment of People's Republic of China, a refined version of Mandarin, *Putonghua* (literally "common speech"), became the official language of the country. *Putonghua* is based on Northern Mandarin regionalects and uses the Beijing phonological system as the norm of pronunciation (Ministry of Education of People's Republic of China, 1956). The promotion of *Putonghua* has always assumed a central position in China's language policy (M. Zhou, 2006). Measures have been taken to make sure that it is the language for instruction, government agencies, and mass media across the country (P. Chen, 1999). The continued national *Putonghua* campaign has achieved considerable success across the country (X. Liu, 1999; The Steering Group Office for Survey of Language Use in China, 2006). According to a nationwide survey of the language situation in China (The Steering Group Office for Survey of Language Use in China, 2006), proficiency in *Putonghua* has increased over the years: while only 30.97% of those in their 60s speak

Putonghua, as many as 70.12% of teenagers are fluent in *Putonghua*.

Alongside the establishment of an official language, an official romanization writing system, *Hanyu Pinyin* (literally "spelling sounds for Chinese", henceforth *Pinyin*), was also adopted in 1958. Unlike the logographic Chinese characters that provide limited phonetic information, *Pinyin* was specifically designed so that each character would be associated with only one *Pinyin* romanization, including tone marks. This phonetically-based orthography represents all the phonemic contrasts for consonants and most phonemic contrasts for vowels in *Putonghua*. For example, the bilabial nasal /m/ and the alveolar nasal /n/ are represented as "m" and "n" in *Pinyin* respectively. The coexistence of logographic characters and *Pinyin* in China can be described as "diagraphic" (DeFrancis, 1986). Characters are used in all formal and informal communication among the Chinese people, and *Pinyin* is used mostly for the romanization of proper names in international communication, as well as the teaching of Mandarin phonology for domestic and foreign learners alike (Y. Liu, 2005). In addition, *Pinyin* also serves as the basis for a popular Chinese input method for computers and digital devices.

As is the case with many sociolinguistic works, while we often claim how certain linguistic varieties or variants deviate from the standard, it is can be very challenging to articulate the so-called standard norm. In the context of *Putonghua*, it is useful to have an official definition, especially when it is accompanied by a phonetically-based orthography. Nonetheless, the existence of these guides does not guarantee that speakers, even those that trained to be the "face" of standard speech, would follow them strictly. In fact, for one of the variables I examine in this study, as I discuss in Section 2.4, there is a disagreement in terms of how it is defined officially, and how it is used in media that are commonly perceived as standard speech, for example, national news broadcasts. Therefore, in the remaining part of the dissertation, when there exists such a difference, I will use **codified *Putonghua*** to represent a variety of Mandarin whose phonological forms correspond to what is defined in authoritative dictionaries like *Contemporary Chinese Dictionary* (*Xiandai hanyu cidian*

[Contemporary Chinese Dictionary], 2012). On the other hand, the norm that is often used in national news broadcast will be referred to as **practiced *Putonghua***.

Given the considerable linguistic differences between Mandarin and other regionalects, the acquisition of *Putonghua* in non-Northern Mandarin-speaking regions can be considered as a type of contact phenomenon that bears some resemblance to the canonical process of second language acquisition. Following the convention of previous literature in Chinese linguistics (Qie, 2015), in this dissertation, I will refer to the result of this *Putonghua* acquisition as Regional Mandarin (*difang putonghua*). Using Thomason and Kaufman's (1988) analytic framework of language contact, most regional Mandarin varieties are outcomes of high intensity language shift, where large groups of speakers are acquiring a new linguistic system. Taken together, in southern China, diglossia (Ferguson, 1959) is often the norm. The local regionalects are used with families and friends, whereas regional Mandarin is used in the public sphere (P. Chen, 1999).

2.4 Northern Mandarin

2.4.1 Northern Mandarin Features

As discussed in Section 2.3, *Putonghua* is based on Northern Mandarin, and uses Beijing Mandarin as the phonological standard. However, this does not mean that all Northerners speak *Putonghua*. After all, there are some localisms in Northern Mandarin that are not incorporated in *Putonghua*. On the other hand, Northern Mandarin and *Putonghua* are hardly monolithic entities. In practice, the relationship between the two varieties is best described as a continuum (Q. Zhang, 2005). On the one end, we find Northern Mandarin characterized by the heavy use of local features. The fewer local features there are, the more closely the language production approaches *Putonghua*. Therefore, drawing on the concept of "ethnolinguistic repertoire" (S. B. Benor, 2010), in this section, I discuss a repertoire of Northern Mandarin features that mark the speech as more regional than standard.

Phonological features of Northern Mandarin

Table 2.1: Phonological features of Northern Mandarin

Features	Description	Examples	
		Putonghua	Northern Mandarin
Rhotacization (P. Chen, 1999; Chirkova & Chen, 2011; M. Hu, 1986; T. Lin & Shen, 1995; Y.-H. Lin, 2007; Lu, 1995; Peng, 2004; L. Wang, 2014; Q. Zhang, 2008; C. Zhou, 2006)	An r-suffix is added to the preceding syllable to be part of its rime. There are more words with the r-suffix in Northern Mandarin than in *Putonghua*.	'park' *gōng.yuán* [kuŋ.ɥɛn]	'park' *gōng.yuánr* [kuŋ.ɥəɹ]

Neutral Tone (P. Chen, 1999; Chirkova & Chen, 2011; M. Hu, 1986; W.-S. Lee & Zee, 2008; M. Lin & Yan, 1980, 1990; Y.-H. Lin, 2007; Lu, 1995; y. Wang, 2004; Q. Zhang, 2005; C. Zhou, 2006)	A non-initial syllable is sometimes produced with weak stress or neutral tone. There are more neutral tone words in Northern Mandarin than in *Putonghua*.	'watermelon' *xī.**guā***	'watermelon' *xī.**gua***
Initial /w/->[ʊ] (Chirkova & Chen, 2011; T. Lin & Shen, 1995; Y.-H. Lin, 2007; Shen, 1987; F. Wang, 2007; Wiener & Shih, 2013; S. Xu, 1979; Ying, 2011; S. Zhang, 2010)	Syllable initial /w/ becomes /ʊ/, except when followed by rounded vowels.	'ask' *wèn* [**w**ən]	'ask' *wèn* [**ʊ**ən]
Retroflex sibilant lenition (P. Chen, 1999; Gui & Liu, 2011; Pankhurst, 2012; Q. Zhang, 2005)	Retroflex sibilants in non-initial syllables are lenited and realized as [ɹ].	'thirty' *sān.shí* [san.ʂɻ̩]	'thirty' *sān.shí* [san.**ɹ**ɻ̩]

Palatal fricative fronting (Y. Cao, 1987; Chirkova & Chen, 2011; M. Hu, 1988, 1991b; F. Li, 2008; S. Xu, 1979)	The fronting of palatal sibilants [tɕ, tɕʰ, ɕ]. Associated with young females.	'machine' *jī.qìng* **[tɕi.tɕʰi]**	'machine' *jī.qìng* **[tsɻ.tsʰɻ]**

Table 2.1 shows five phonological features that are characteristic of Northern Mandarin. The first four are found across the Northern Mandarin-speaking population, but the last one is typically associated with a particular social group. Rhotacization, or r-suffixation is one of the most salient phonological features of Northern Mandarin (P. Chen, 1999; Chirkova & Chen, 2011; Y.-H. Lin, 2007; Q. Zhang, 2005, 2008). Drawing on the metalinguistic commentary from Beijing speakers as well as 'Beijing-flavor' literary works and the corresponding literary criticisms, Zhang argues that rhotacization "is a rich linguistic resource for evoking localness" (2008, p. 216). It refers to a phonological process by which a subsyllabic retroflex [ɻ] is added to the syllable final, causing the final to become rhotacized (Chao, 1968; Y.-H. Lin, 2007). The r-suffix is often defined as a diminutive suffix, although there are also cases where the meaning of smallness or endearment is not intended. For instance, as shown in Table 2.1, when the r-suffix is added to the word for "park", it does not convey a sense of smallness. While *Putonghua* does contain some rhotacized tokens, Northern Mandarin is known for applying r-suffixation extensively to more words. Since [ɻ] or the rhotacized vowel does not exist in many southern regionalects, many speakers of southern Mandarin varieties either do not attach the r-suffix or pronounce it as a separate syllable (Y.-H. Lin, 2007).

Neutral tone is another well-known feature for Northern Mandarin. Mandarin has four phonemic lexical tones, but some syllables are produced with weak stress, or a neutral tone. Particularly, neutral tone syllables are in non-initial positions and preceded by at least a syllable with lexical tone. In neutral tone syllables, "the tone range is flattened to zero and the duration is relatively short" (Chao, 1968, p. 35). Neutral tone occurs only on a limited set of lexicon items in *Putonghua*, but it is much more pervasive in Northern Mandarin (P. Chen, 1999; M. Hu, 1986; Y.-H. Lin, 2007). In Xiamen Mandarin, as well as many southern Mandarin varieties, the use of neutral tone is much more limited than in *Putonghua* (P. Chen, 1999; K. Huang, 2012; Y.-H. Lin, 2007).

In codified *Putonghua*, the only accepted realization for the phoneme /w/ is a labial-velar approximant. However, for many Northern Mandarin speakers /w/ is often realized as a labiodental approximant [ʋ], except when followed by rounded vowels (Shen, 1987; F. Wang, 2007; L. Wang, 2011; Ying, 2011). Wang's (2007) study on /w/ production in different Mandarin varieties revealed a major difference between Northern and Southern regions: in seven Northern Mandarin-speaking provinces, /w/ is realized as [ʋ] in more than 50% of all tokens, whereas in four Southern Mandarin-speaking provinces, the [ʋ] realization only occurred in less than 5% of the tokens. Specifically, Wang (2007) found that in Zhangzhou, Fujian, a Southern Min-speaking region like Xiamen, the percentage of [ʋ] production is less than 3%. In contrast to rhotacization and neutral tone, this feature is below the level of consciousness despite its prevalence. As a result, this feature is also commonly found in national broadcasting (M. K. Chan, 1998; J. Zhou, 2003), partly because many broadcasters are from Northern Mandarin-speaking regions. In other words, the [ʋ] variant for /w/ can be seen as part of practiced *Putonghua*, despite its absence in codified *Putonghua*.

In casual speech, Northern Mandarin speakers sometimes lenite retroflex sibilants [tʂ, tʂʰ, ʂ] in non-initial syllables and produce them as the rhotic approximant /ɹ/ (P. Chen, 1999; Pankhurst, 2012; Q. Zhang, 2005). This process sometimes co-occurs with syllable

contraction (Gui & Liu, 2011; L. Huang, Yan, & Lu, 2005). While syllable contraction occurs in other Mandarin varieties as well (C. Xu & Mao, 2017), what sets Northern Mandarin apart is that [ɹ] often remains in the output of the contraction. For example, the phrase *bù.zhī.dào* "NEG-know" [pu.tʂɹ.tɑu] is often realized as [pɹ.tɑu]. These two phonological processes are featured in a recent meme that aims to teach its readers the authentic Beijing Mandarin. Figure 2.4 shows a version of the meme where multiple words were written phonetically in a Beijing accent using Chinese characters. Table 2.2 provides the glossing of this meme, including the original pronunciation spellings, the intended words in *Putonghua* as well as the corresponding IPA transcriptions for both versions. The differences between the Beijing Mandarin pronunciation and the *Putonghua* pronunciation are bolded for the IPA transcriptions. Four of the eight words involved the process of lenition: in some cases, lenition occurs independently (item 3 and 4), and it other cases, it co-occurs with syllable contraction (items 7 and 8). In both items 7 and 8, the second syllable in the sequence, [ʂɻ], was reduced to an r-suffix in the resulting monosyllable. The pronunciation spellings also illustrated rhotacization in items 2, 4, 5, 7, providing further evidence that it is one of the more well-known features of Northern Mandarin.

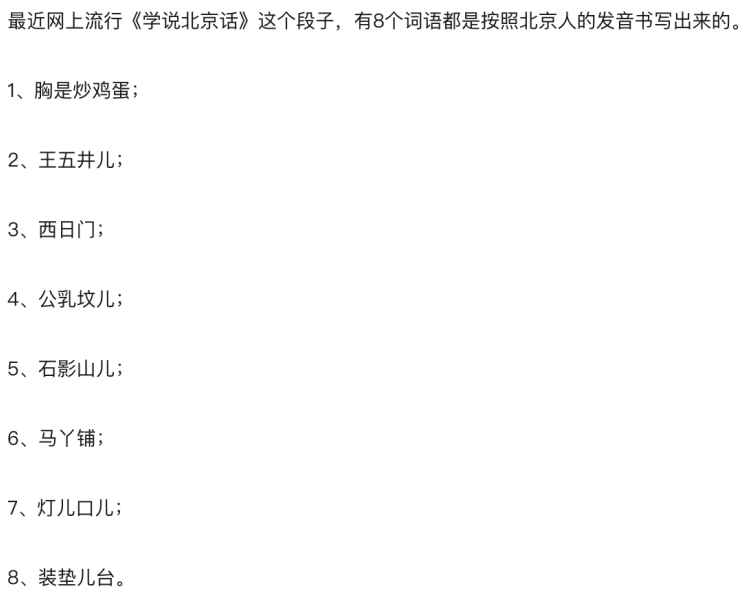


Figure 2.4: A meme on "Learning to speak Beijing Mandarin" (Beijing sijiucheng, 2016)

Table 2.2: Pronunciation spellings and intended words in Chinese characters and IPA from the "Learning to speak Beijing Mandarin" meme. Differences between the pronunciation spellings and intended words are bolded.

Pronunciation spellings (Beijing Mandarin)	**IPA transcriptions of pronunciation spellings** [2]	**Intended words (*Putonghua*)**	**IPA transcriptions of intended words**
胸是炒鸡蛋	[**ɕjuŋ**.ʂɻ̩.tʂʰɑu.tɕi.tan]	西红柿炒鸡蛋	[**ɕi.xuŋ**.ʂɻ̩.tʂʰɑu.tɕi.tan]
王五井儿	[wɑŋ.**w**u.tɕjə**ɚ̃**]	王府井	[wɑŋ.**f**u.tɕjə**ŋ**]
西日门	[ɕi.**ɹ**ɻ̩.mən]	西直门	[ɕi.**tʂ**ɻ̩.mən]
公乳坟儿	[kuŋ.**ɻ**u.fə**ɻ**]	公主坟	[kuŋ.**tʂ**u.fə**n**]

[2] All of the 儿 *er* characters in the pronunciation spellings are transcribed as the r-suffixes attached to the preceding syllables. The phonetic realization of the r-suffix depends on the preceding syllable, and the transcription here follows Lee's (2005) proposal.

石影山儿	[ʂɻ̩.**j**əŋ.ʂ**aɚ**]	石景山	[ʂɻ̩.**tɕ**jəŋ.ʂ**an**]
马丫铺	[ma.**j**a.pʰu]	马家堡	[ma.**tɕj**a.pʰu]
灯儿口儿	[**tə̃ɚ**.kʰo**ɚ**]	灯市口	[**təŋ.ʂɻ̩**.kʰo**u**]
装垫儿台	[**tʂwɑŋ.tiɚ**.tʰai]	中央电视台	[**tʂuŋ.jɑŋ.tjɛn.ʂɻ̩**.tʰai]

The last feature listed in Table 2.1 is also known as *nüguoyin*, or "feminine accent" in the Chinese linguistic literature (Y. Cao, 1987; M. Hu, 1988, 1991b). It refers to the phenomenon that young school girls in Northern China, particularly in Beijing, tend to produce fronted tokens for palatal sibilants [tɕ, tɕʰ, ɕ].

Lexical features of Northern Mandarin

In addition to the phonological system, *Putonghua* and Northern Mandarin also differ in their lexicon (P. Chen, 1999; Gui & Liu, 2011; M. Hu, 1986; S. Xu, 1979). Example 1 shows four lexical items in Beijing Mandarin that are not part of *Putonghua*. The first word is not found in the 2012 edition of *Xiandai Hanyu Cidian* (Contemporary Chinese Dictionary), one of the most authoritative Chinese dictionaries, and the other three are labeled as dialectal vocabulary (Chinese Academy of Social Sciences, 2012).

(1) a. 白斋 *bái.zhāi*: "dine and dash"

b. 大拿 *dà.ná*: "an expert in a given field"

c. 跌份儿 *diē.fènr*: "lose face"

d. 擦黑儿 *cā.hēir*: "evening"

Sometimes these regional lexical items do not conform to the phonotactics of *Putonghua*. In *Putonghua*, the syllable that carries a lexical tone falls in the structure of (C)V(X) (Duanmu, 2007). Given the phonetic inventory and this syllable structure, there are 1,900

theoretically possible segmental syllable types (Duanmu, 2007, 2008). Nonetheless, in practice, we have only observed approximately 400 (C)V(X), leaving 1,500 phonotactic gaps (H. S. Wang, 1998). Since *Putonghua* has four lexical tones, we would expect 1,600 syllable+tone combinations. However, only 1,300 unique combinations are attested morphemes, leaving 300 tonotactic gaps (H. S. Wang, 1998). In Xu's (1979) discussion of the differences between *Putonghua* and Beijing Mandarin, he listed 16 Beijing Mandarin words that fill in the phonotactic gaps in *Putonghua*. Examples 2a-2c demonstrate such regional vocabulary. Similarly, Xu (1979) also included 60 Beijing Mandarin words whose syllable+tone pairing falls in the tonotactic gaps of *Putonghua*. Examples 2d-2f belong to this class of words.

(2) a. *biā*: "stick"

b. *tēi*: "very, extremely"

c. *cèi*: "break"

d. *béng*: "no need"

e. *gén*: "funny"

f. *hǎ*: "scold"

2.5 Xiamen Mandarin

2.5.1 Language Situations in Xiamen

Like most southern Mandarin varieties, Xiamen Mandarin is a contact variety. Therefore, in order to give an update-to-date description of Xiamen Mandarin, it is necessary to introduce the current language situations in Xiamen. As introduced above, Xiamen is a city in the southern part of the Fujian province, where the Min regionalect group is spoken. The mountainous terrains in Fujian gave rise to a vast heterogeneity within the Min group, where

"every county generally has its own distinctive dialect which often differs quite radically from those in neighboring counties" (Norman, 1988, p. 188). Figure 2.5 shows six major sub-regionalect groups within Min: Mindong, Minbei, Shaoning, Minzhong, Minnan, and Puxian (Yan, 2006). Minnan, or Southern Min, is the local Min variety spoken in Xiamen.

The urgent need for a lingua franca in Fujian has greatly facilitated the promotion of *Putonghua* in the region(P. Chen, 1999; R. Li, 1995). According to the Survey of the Language Situation in China (The Steering Group Office for Survey of Language Use in China, 2006), 80.28% of the Min-speaking population has some conversational knowledge of *Putonghua*, a percentage higher than any other major regionalect-speaking area. As early as the 1950s, Xiamen was named the "national model city for *Putonghua* promotion" *Quanguo tuiguang putonghua xianjin chengshi* (China National Radio, 2014). In 2005, the city was among the first to pass the national evaluation of *Putonghua* dissemination (China National Radio, 2014).

At the same time, the number of speakers of Southern Min, the local variety of the Min regionalect in Xiamen, is on the decline. Wang and Yu' s (2012) survey work on language ecology in the city revealed that while 100% of their participants spoke *Putonghua*, many younger speakers did not speak the local regionalect. The Southern Min-speaking rates were 43%, 65% and 70% for teenagers, young adults and middle-aged speakers, respectively. This language situation is at least partially the result of a radical change in the demographics of the city. Since the 1990s, the influx of migrants to Xiamen has been increasing rapidly: the number changed from 180,000 in 1994 to 406,100 in 1996 (Research Group on Migration to Xiamen and the Research on the Economic and Social Devleopment of Xiamen, 2003). In 2016, more than half of the residents in Xiamen were registered to a *hukou* outside the city, suggesting that they were likely born elsewhere (W. Lin & Ji, 2017). The heterogeneity of Chinese regionalects creates a challenge for the migrants to acquire Southern Min. In addition, the vigorous campaign for *Putonghua* limits the use of the regionalect in the public domain, making it difficult to be exposed to Southern Min.

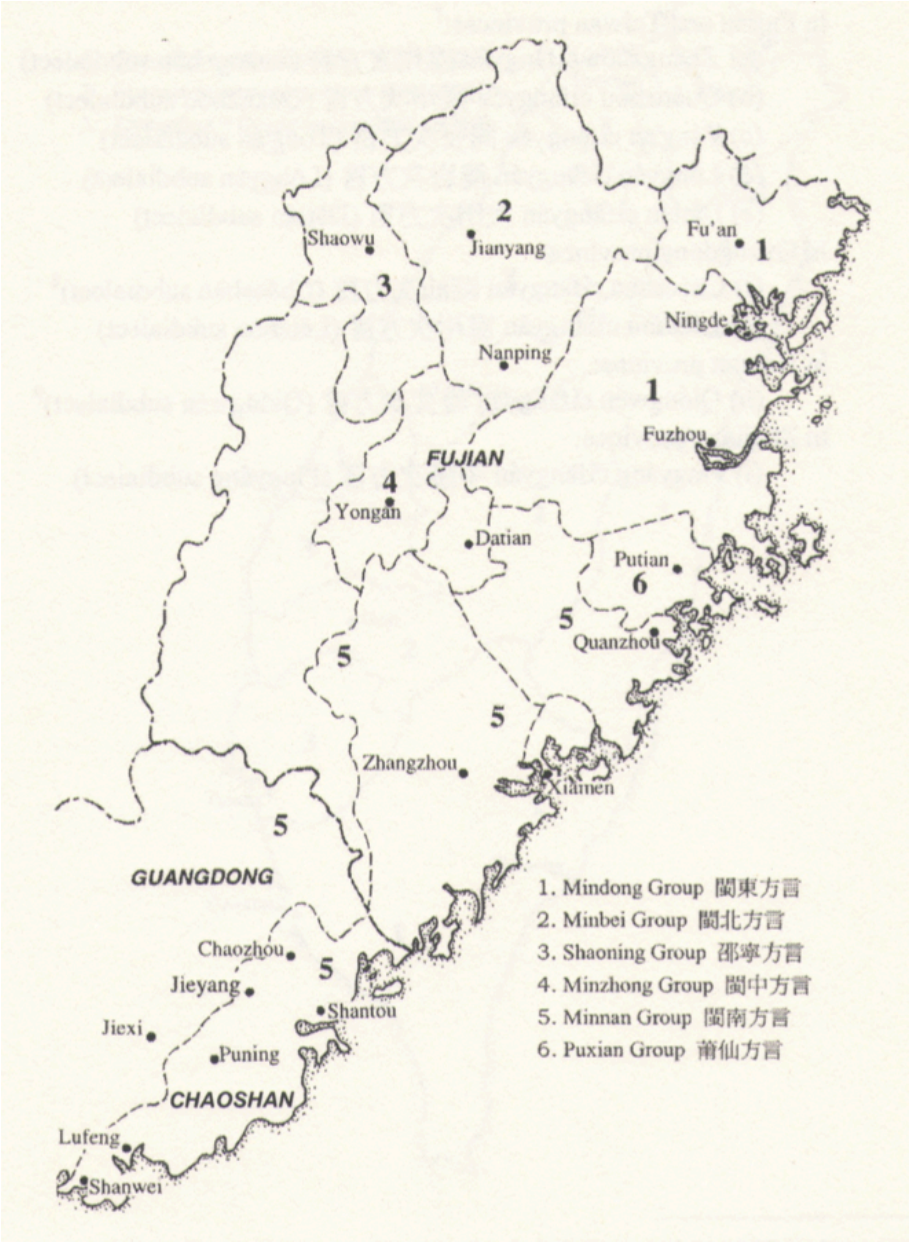


Figure 2.5: Min dialect in Fujian and Guangdong, from (Yan, 2006)

In his work on contact linguistics, Winford (2003) illustrates the emergence and diffusion of contact varieties that arise in a language situation similar to the one in Xiamen – where there is only limited interaction between the shifting group and the native speakers of the target language (henceforth TL).

> *Since native speakers of the original TL are typically in a small minority and have higher social status, only the more educated and elite sections of the community have access to native TL models...The fact that most members of the community interact primarily among themselves rather than with native speakers of the TL means that the contact variety of the TL itself becomes the primary target of learning. Indeed, even teachers of the TL in the schools may speak a 'local' version of it.* (4)
>
> *(Winford 2003, p.252)*

As a standardized linguistic variety, it could be argued that *Putonghua* does not have actual native speakers but rather trained specialists. Since Xiamen is geographically far from the Northern Mandarin-speaking region, Xiamen Mandarin speakers have limited personal exposure to the lexical and phonological base of *Putonghua*. Therefore, similar to what Winford (2003) described in the quote above, the primary learning targets for the majority of Xiamen Mandarin speakers are news media and teachers who have a local accent. As a result, Xiamen Mandarin becomes a Mandarin variety that is subject to considerable substratum influence (Thomason & Kaufman, 1988) in its phonology. The following section discusses in detail features of Xiamen Mandarin in phonology, lexicon, and syntax.

2.5.2 Xiamen Mandarin features

As the pioneering work on regional Mandarin, Chen (1987) discusses the features of Mandarin used in Southern Min-speaking region, using Xiamen Mandarin as an example. Since the regional features of Xiamen Mandarin largely result from the substratum influence of Southern Min, Chen begins with a comparison of the linguistic structures of Southern Min and *Putonghua* and states that the two varieties differ the most in phonology, less in lexicon,

and the least in syntax. Therefore, we can argue that Xiamen Mandarin is most distinct in its phonology.

Phonological features of Xiamen Mandarin

Table 2.3: Phonological features of Xiamen Mandarin

Features	Description	Examples	
		Putonghua	Xiamen Mandarin
De-retroflexion (Y. Chen, 1987; L. Li, 2013; R. Li, 1988; Y. Lin, 2018; L. Wang, 2010)	Retroflex sibilants [tʂ, tʂʰ, ʂ] are often produced as denti-alveolar or post-alveolar sibilants.	'poet' *shī.rén* [**ʂ**ɹ̩.ɻən]	'poet' *shī.rén* [**s**ɹ̩.ɻən] or [**ʃ**ɹ̩.ɻən]
Initial /n/, /ɻ/ -> /l/ (Y. Chen, 1987; L. Li, 2013; R. Li, 1988; Y. Lin, 2018; L. Wang, 2010)	Initial alveolar nasal /n/ and retroflex approximant /ɻ/ in *Putonghua* are merged to the lateral approximant /l/ in Xiamen Mandarin. The phoneme /l/ is realized as [l] or a stop [d].	'boy' *nán.hái* [**n**an.hai]	'boy' *nán.hái* [**l**an.hai] or [**d**an.hai]
		'entrance' *rù.kǒu* [**ɻ**u.kʰou]	'entrance' *rù.kǒu* [**l**u.kʰou] or [**d**u.kʰou]

Initial /f/ -> [h] (Y. Chen, 1987; L. Li, 2013; R. Li, 1988; L. Wang, 2010)	Initial /f/ in *Putonghua* is merged to phoneme /x/ in Xiamen Mandarin, which is often realized as a glottal fricative [h].	'airplane' *fēi.jī* [**f**ei.tɕi]	'airplane' *fēi.jī* [**h**wei.tɕi]
Unrounding of high front vowel (Y. Chen, 1987)	Rounded high front vowel /y/ in *Putonghua* is merged to its unrounded counterpart /i/ in Xiamen Mandarin.	'fishball' *yú.wán* [ɥ**y**.wan]	'fishball' *yú.wán* [j**i**.wan]
Merger of syllable-final nasals (L. Li, 2013; L. Wang, 2010)	The alveolar nasal /n/ and velar nasal /ŋ/ are often indistinct when preceded by /i/ and /ə/.	'should' *yīng.gāi* [ji**ŋ**.gai]	'should' *yīng.gāi* [ji**n**.gai]

Table 2.3 shows the major phonological features of Xiamen Mandarin. All features are also found in Taiwan Mandarin (Y.-H. Lin, 2007), and several are common in other southern Mandarin varieties (P. Chen, 1999). The first feature listed, for example, is a stereotypical feature of southern Mandarin. Since Southern Min does not have retroflex sibilants, phonemes [tʂ, tʂʰ, ʂ] in *Putonghua* are often not realized as retroflex sounds in

Xiamen Mandarin. Early research suggests that the retroflex sibilants [tʂ, tʂʰ, ʂ] are merged to denti-alveolar sibilants [ts, tsʰ, s] respectively (Y. Chen, 1987). However, in a recent study I have shown that Xiamen speakers below 30 make rather clear distinction between /s/ and /ʂ/ as a result of the mastery of *Pinyin*, the phonetically-based orthography for *Putonghua*, through elementary education (Y. Lin, 2018). It is also worth noting, though, that even among younger Xiamen Mandarin speakers, the realization of [tʂ, tʂʰ, ʂ] tends to be more front than retroflex.

In Southern Min, morphemes with an initial /n/ or /ɻ/ in *Putonghua* are all pronounced with an initial /l/. As a result, the phonemes /n/ and /ɻ/ are merged to /l/ in syllable initial position. In most cases, the phoneme /l/ is realized as a lateral approximant [l] (Y. Lin, 2018). Nonetheless, it is sometimes realized as a dental stop [d] (Y. Lin, 2018), as the phoneme /l/ is often realized as [d] or [ⁿd] (M. Chan, 1987; F. Hu, 2005). Similar to the case with the /s/-/ʂ/ merger, younger Xiamen speakers also had clearer distinction for the /ɻ/-/l/ than those above the age of 30 (Y. Lin, 2018).

The third feature listed in Table 2.3 involves two phonological processes. In *Putonghua*, there is a phonemic distinction between /f/ and /x/. Since /f/ is absent in Southern Min, the /f/ phoneme is merged to /x/ in Xiamen Mandarin. Additionally, the velar fricative /x/ is often produced as the glottal fricative [h] instead. This /f/-/x/ merger is arguably the most salient feature of the Mandarin varieties in Fujian. For example, it plays a key role in the comic skit I discuss in Section 2.6.1, which centers round the Mandarin accent in Fujian. Figure 2.6 presents another wordplay that is related to this feature. This picture I found online is a photoshopped version of a handbook entitled "How do Fujianese learn *Putonghua*". Example 3 illustrates the differences between the original and altered versions of the title in Chinese characters and *Pinyin* [3]: the character for "fu" 福, the first character in *fu.jian*, is replaced with that for "hu" 胡, and the character for "hua" 话 *speech* is replaced with that

[3]The *Pinyin* notation above the Chinese characters in the picture remains unaltered. Therefore, the *Pinyin* notation in the picture actually corresponds to the *Pinyin* provided in the original. The *Pinyin* notation provided in the altered example is to show how the photoshopped version would be pronounced in *Putonghua*.

for "fa" 发 *hair*. These substitutions are meant to represent the idea that Fujianese speakers often confuses /f/ and /x/. The substitution of 福建 *fu.jian* with 胡建 *hu.jian* became so popular that it is common to see posts like "Finally I get to go back to my hometown hujian" or "I am excited to visit hujian" on social media. Despite the considerable awareness associated with this variable, many young speakers are no longer merging the two phonemes. In my second qualifying paper, I asked Xiamen Mandarin speakers to read a 201-word list, which contains 20 disyllabic words with the /f/ initial. Results of auditory coding suggest that all of the speakers below age 30 (N=18) had [f] realization for these words.

(3) a. Original: 福建人怎样学习普通话 ***F****u.jian.ren zen.yang xue.xi Pu.tong.****h****ua*

b. Altered: 胡建人怎么样学习普通发 ***H****u.jian.ren zen.yang xue.xi Pu.tong.****f****a*

The fourth and fifth features concern with the variation in syllable finals [4]. Since the rounded high front vowel /y/ is not found in Southern Min, it is often merged to the unrounded high front vowel /i/ in Xiamen Mandarin (Y. Chen, 1987). Lastly, more recent research points out that there is a merger between the alveolar nasal /n/ and velar nasal /ŋ/ in Xiamen Mandarin. This feature is also a common feature in other southern Mandarin varieties (P. Chen, 1999).

In terms of prosody, Xiamen Mandarin is also different from *Putonghua*. Southern Min has a narrower pitch range than *Putonghua* and the pitch value for the same tonal contour is often different. In the Chinese linguistics literature, a 5-point system is often used to represent the idealized pitch value of tones, in which 1 is the lowest and 5 the highest (Chao, 1930). In *Putonghua*, the pitch value for high level tone is 55, whereas that for level tone Southern Min is 44 or 33 (Y. Chen, 1987; R. Li, 1988). As a result, Xiamen Mandarin speakers tend to have lower pitch values. In a more recent study, Li and colleges (2006) also found empirical evidence that Xiamen Mandarin speakers have narrower F0 range than *Putonghua* speakers.

[4] "Initials" and "finals" are terms widely used among Chinese linguistics in phonological analysis. They are equivalent to "onsets" and "rimes" respectively.

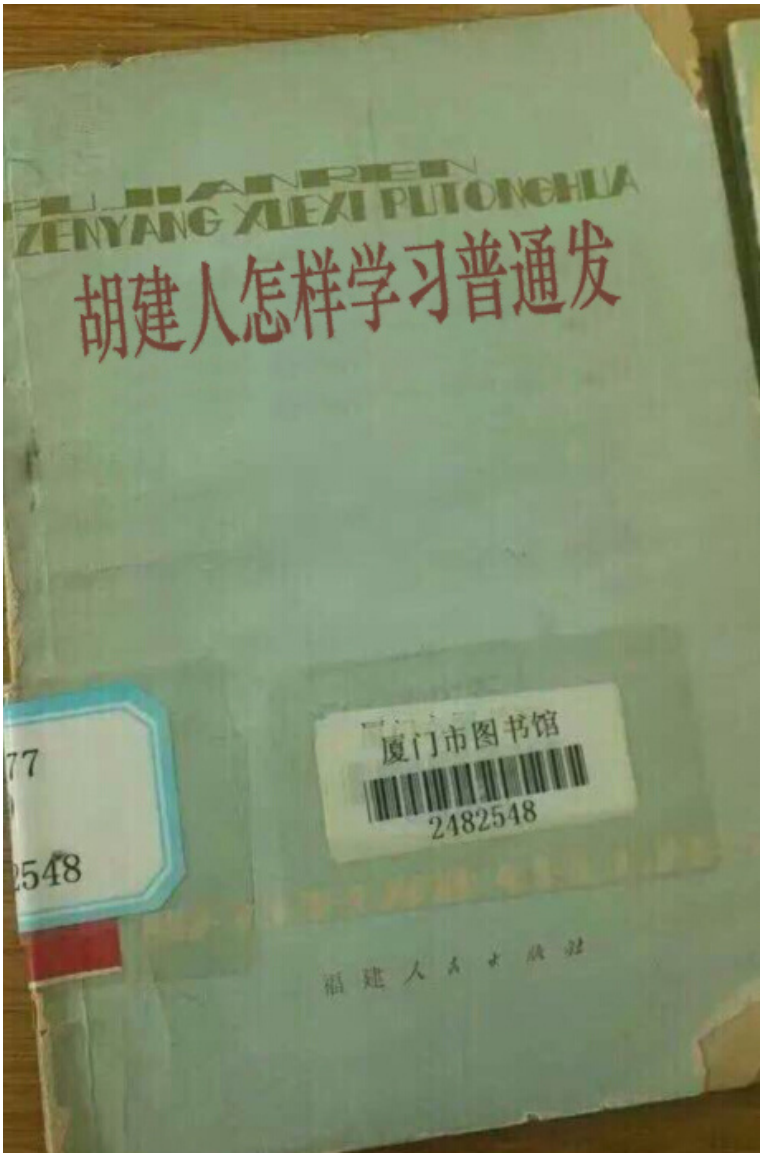


Figure 2.6: A photoshopped picture of a handbook called "How do Fujinaese learn *Putonghua*"

Lexical features of Xiamen Mandarin

The majority of the lexical features of Xiamen Mandarin result from the lexical differences between Southern Min and *Putonghua*. Sometimes, the dialectal vocabulary only shares some morphemes with the *Putonghua* counterpart. For instance, in example 4a, the content morpheme *jiǎo* "dumpling" is shared between the two varieties. In *Putonghua*, a diminutive suffix *-zi*, is attached to it. In Xiamen Mandarin, the morpheme for "water" is added as the modifier. Similarly 4b also illustrates a case where the content morpheme *kù* "trousers" is used in both varieties.

A key lexical difference between Southern Min and *Putonghua* is that the order of morphemes is often reversed (Y. Chen, 1987; R. Li, 1988; L. Wang, 2010; Xiang, 1988). Example 4c and 4d are cases where the word order in Southern Min is carried over to Xiamen Mandarin. In 4d, both words have the morphemes *gan* "dried" and *cai* "vegetable". In Xiamen Mandarin, the order is "vegetable-dried", whereas in *Putonghua* the order is "dried-vegetable".

In other cases, the two varieties use the same morpheme with different semantic meanings. As shown in 4e, in Xiamen Mandarin, *shǒu* includes both hands and arms, where in *Putonghua*, the same word means only hands.

(4) a. 水饺 *shǔi.jiǎo* (饺子 *jiǎo.zi*) "Chinese dumpling"

b. 裤头 *kù.tóu* (裤腰 *kù.yāo*) "waist (of trousers)"

c. 鸭母 *yā.mǔ* (母鸭 *mǔ.yā*) "female duck"

d. 菜干 *cài.gān* (干菜 *gān.cài*) "dried vegetables"

e. 手 *shǒu* (手 *shǒu* and 胳膊 *gē.bo*) "hands and/or arms"

f. 脚 *jiǎo* (脚 *jiǎo* and 腿 *tǔi*) "feet and legs"

(The first word in each item is the variant in Xiamen Mandarin, and the word in parenthesis is the variant in *Putonghua*)

Syntactic features of Xiamen Mandarin

Similar to the case with the phonological and lexical system, the regional syntactic features of Xiamen Mandarin are mainly an effect of calquing from Southern Min. I present three features here, all of which are also found in Taiwan Mandarin (Baran, 2007; Kubler, 1985). In Xiamen Mandarin, the morpheme 有 *yǒu* "have" has more grammatical functions than in *Putonghua* (Y. Chen, 1987; R. Li, 1988; L. Wang, 2010). In example 5a, *yǒu* serves as an auxiliary to express habitual actions, and in 5b, it marks the completion of an action. Li (1988) conducted a grammatical test among 236 middle and high school students in Fuzhou, the capital city of Fujian, and fewer than 10 students found 5a ungrammatical. Example 6 illustrates the use of 给 *gěi* "give" as a marker for indirect object. Since Southern Min does not have the direct equivalent of *gào.sù* "tell" in *Putonghua*, the phrase *ka...kong* "give...say" is often used to express the same meaning (Kubler, 1985). As a result, the corresponding phrase *gěi...jiǎng* "give...say" is commonly found in Xiamen Mandarin. The last feature listed here is the use of 用 *yòng* "use" as an instrumental marker when preceded by a nominalized verb marked by *de*. The construction *yòng...de* in Xiamen Mandarin also corresponds to the Southern Min construction *ieng...e*.

(5) a. **XM:** Ta **you** chouyan, wo mei chouyan.
He have smoke, I not smoke.
PTH: Ta chouyan, wo bu chouyan.
He smoke, I not smoke.
"He smokes, but I don't smoke."

b. **XM:** Ni **you** kandao ta ma? – Wo meiyou kandao ta.
You have saw him PARTICLE? – I not-have saw him.
PTH: Ni kanjian ta le ma? – Wo mei kanjian ta.
You saw him COMPL. PART. PARTICLE? – I not saw him.
"Did you see him? - I didn't see him. "

(6) **XM:** Ta bu **gei** ren jiang neixie shiqing.
He not give people say those things.
PTH: Ta bu gaosu ren neixie shiqing.
He not tell people those things.
"He doesn't tell people about those things."

(7) **XM:** Women **yong** zou de.
We use walk PARTICLE.
PTH: Women shi zoulu lai de.
We be walk come PARTICLE.
"We came on foot."

2.6 Social Meaning of Mandarin Varieties

Section 2.4 and 2.5 review the regional features of Northern and Xiamen Mandarin. In this section, I focus on the social meaning associated with these two varieties. As discussed in Chapter 1, the same regional variety can socially perceived in different ways among listeners from different regions (Niedzielski & Preston, 2000; Preston, 1989). Therefore, in order to understand the sociolinguistic environments in which the mobile Xiamen college students develop their place-based identities, it is crucial to examine the social meaning of Northern and Xiamen Mandarin in Beijing and Xiamen respectively.

2.6.1 Mandarin Varieties in Beijing

Since Northern Mandarin serves as the basis for *Putonghua*, there is a sense of prestige associated with the variety nationwide. In Xu and Mao's (2017) perceptual dialectology study on Mandarin varieties, Northern Mandarin was perceived as more standard than Mandarin varieties in the South by both Northern and Southern respondents. Of the Northern Mandarin varieties, Beijing Mandarin often enjoys a special national status due to the political importance and cultural prominence of the city. On the other hand, in a metropolis like Beijing, it is becoming increasingly common to for people interact with speakers from over all of the country. In this situation, the excessive use of Northern Mandarin features can be viewed negatively. The following quote comes from Zhang's (2005; 2017) work on young professionals in Beijing. The interviewee is a Beijing Mandarin speaker working in a foreign-owned business in Beijing. He admits making explicit efforts to reduce his local accent, and suggests that a strong accent does not match with the professional image that is crucial at the work place. Similarly, in a matched-guise study that examines how accents affect employment, Nie (2015) found that the Northeastern Mandarin guise was rated lower than *Putonghua* in both the status and solidarity dimensions by 180 listeners who were working in Beijing. The metalinguistic commentary reveals that using Northeastern Mandarin at work is considered "less educated", "provincial", and "inconsiderate for listeners" (Nie, 2015, p. 165).

Yes. I sometimes talk like this [reducing Beijing accent]. Of course there are (people like this). The reason is that, like this. One, if one talks with a strong Beijing flavor, others may not understand them well. This is one (reason). Of course this is not the most important (reason). ***The most important is that if your Beijing flavor is too strong, others will feel you're rustic. They'll have this impression. (They) will feel you are totally out of place.*** *I myself am like this. Others are also like this. Or they may not be conscious about it. Yes, there is situation like this.* (5)

(Zhang 2017, p.85; emphasis in the original, underlined parts are said originally in English)

As mentioned in Section 2.2, the various regionalects in the south are unintelligible to Northerners. As a result, Southerners are frequently portrayed as linguistically exotic on national media. This impression persists when they speak the regional Mandarin varieties as well. The Mandarin variety in Fujian is widely known for its deviation from the prescribed standard of *Putonghua*. It often appears on the list of "the worst Mandarin accents" (People's Daily Online, 2012). In the 2015 New Year's Gala on China Central Television, the internationally broadcast state-owned media, a comic skit featured an encounter between a Northern father and his daughter's Fujian boyfriend. Excerpt 8 is a transcript of the skit, where A is the boyfriend and B is his future father-in-law. The excerpt revolved around how B guessed the place of origin of A with the help of a hint: the place name starts with an H in *Pinyin*. B exhausted all the options by listing the only three provinces whose name begin with an H, but did not get the correct answer. Finally, there came the punchline - A mispronounced the name of his hometown *Fujian* as [**h**u.tɕjɛn], instead of [**f**u.tɕjɛn] loud and clear. The line triggered applause and laughter from the audience, and the two actors followed up with another turn of conversation that featured the use of [h] for /f/. It is clear that this part of the skit was designed to showcase the distinct accent of Fujinese. Even though A was performed by a Northern actor, he put on a thick mock Fujian accent throughout the skit, using features including the lateralization of /ɹ/, merg-

ing /wo/ to /ɔ/, and merging /f/ to /h/. B was consistently Northern-sounding with his rhotacization, except when he was pronouncing Fuzhou as [hu.tʂou], indicating that he was imitating A on purpose. The fact that such a comic skit was performed one of the premier television events in China showed that the stereotype of an accented Fujianese was rather widespread.

(8) A: *Wo shi nanfang ren* [**l**an.fɑŋ.**l**ən].

I am from the south.

B: *Nanfang shenme di**r**?*

Where in the south?

A: *Nin cai.*

You can guess.

B: *Na na caide zhao?*

How am I supposed to guess?

A: *H datou.*

It begins with an H.

B: *H datou**r**? Hubei.*

It begins with an H? Hubei.

A: *Cuo* [tsʰɔ].

Wrong.

B: *Hunan.*

Hunan.

A: *Cuo.*

Wrong.

B: *Hainan.*

Hainan.

A: *Cuo.*

Wrong.

B: *Nashi shenme difang ya?*

Where is it then?

A: *FUJIAN* [**h**u.tɕjɛn].

FUJIAN.

B: *Na nimen de shenghui shibushi Fuzhou* [**h**u.tʂou]?

Is the capital of your province Fuzhou then?

A: *Feichang* [**h**wei.tʂʰɑŋ] *zhengque!*

Exactly!

(An excerpt from the comic skit "A little cotton-padded jacket", capitalization indicates emphasis, boldface indicates regional Mandarin features)

In order to review how Xiamen Mandarin is perceived in Beijing, it is important to discuss another metalinguistic label, *Gangtai Qiang* "Hong Kong-Taiwan accent", which is often used to describe a Mandarin style different from *Putonghua*. The so-called "Hong Kong-Taiwan accent" is a phrase developed in the Chinese mainland to describe the Mandarin accent used by speakers in Hong Kong and Taiwan. The label has more cultural than linguistic significance as the Mandarin varieties in Hong Kong and Taiwan are in fact quite distinct – the two varieties show evidence of substratum influence from Cantonese and Southern Min respectively. As a result of the economic and cultural prominence of Hong Kong and Taiwan in late 20th century, the "Hong Kong-Taiwan accent" indexes a sense of trendiness. In her recent work *Language and social change in China*, Zhang (2017) explores the enregisterment of what she calls "cosmopolitan Mandarin", a style that incorporates certain features associated with the "Hong Kong-Taiwan accent" into *Putonghua*. Three features that are often found in Cosmopolitan Mandarin include the use of full/lexical tone instead of neutral tone, the lack of rhotacization, and the deretroflexion of sibilants [tʂ, tʂʰ,

ʂ]. In Zhang's abovementioned (2005) work on young professionals in Beijing, she found that while those in state-owned corporations used only neutral tone, speakers in foreign-owned, a population she calls the yuppies, adopted the full tone variants 21% of the time; and female participants used significantly more full tone than their male counterparts. Zhang argued that the difference between the two professional groups result from their participation in different linguistic markets (Bourdieu, 1977). Those in state-owned corporations participate in "the mainland standard *Putonghua* linguistic market", where Beijing Mandarin, the phonological standard for *Putonghua*, is a form of linguistic capital. In contrast, the yuppies participate in "the transnational Chinese linguistic market", where multiple varieties of Mandarin including *Putonghua*, Taiwan Mandarin and Hong Kong Mandarin co-exist simultaneously. More importantly, as illustrated in excerpt 5, the yuppies use less local accent and more cosmopolitan Mandarin not just out of need, but as a way to establish their identity as business professionals in the international sector.

Taken together, we can identify two sets of sociocultural distinctions that are reflected in how different Mandarin varieties are perceived socially in Beijing. On the one hand, there is the North-South distinction, which is foregrounded when the accented Fujian Mandarin is contrasted with the "accent-free" Northern Mandarin. Seeing through this lens, Xiamen Mandarin may be described as a product of imperfect learning of *Putonghua*. On the other hand, there is the *Putonghua*-"Hong Kong-Taiwan accent" distinction, where the latter is associated with a sense of cosmopolitan identity and trendiness. Due to the linguistic similarity between between Xiamen and Taiwan Mandarin, mobile Xiamen speakers in Beijing often receive comments about how they talk like those in a Taiwanese Romance TV dramas. In this case, their distinct linguistic style is perceived as in line with an alternative model of Mandarin to *Putonghua*, one that has its own cultural capital.

2.6.2 Mandarin varieties in Xiamen

In my previous work (Y. Lin, 2018), I examined the language use and ideology of Xiamen Mandarin speakers across different age groups. The study includes an interview that asks the speakers about their opinions of Xiamen and Taiwan Mandarin. Interestingly, when asked about the overall *Putonghua* proficiency in Xiamen, several younger participants framed their response as a contrast between the accented Xiamen Mandarin and the standard Northern Mandarin. Xiamen speakers often use phrases like "Southern Min accent" or "sweet potato accent" (*diguaqiang*) to describe the local Mandarin variety, as shown in excerpt 6. The "sweet potato accent" is a label used almost exclusively in the southern part of Fujian to describe vernacular accents, and often has negative connotations. For example, Speaker02 is placing her own Mandarin accent in between the standard variety spoken in the north and the local "sweet potato accent" , indicating that the standard and the local are opposite ends of a continuum. Similarly, Speaker20 also explicitly names the inland and the north as places where people speak more standard-like Mandarin than in Xiamen. None of the speakers in this study describe themselves as having a "Taiwan accent". In fact, when asked whether they would be able to distinguish Xiamen and Taiwan Mandarin if given recordings of these two varieties, most participants reported that they would be able to tell the difference. As shown in excerpt 8, Speaker07 stressed specifically that Xiamen speakers do not have a "Taiwanese accent".

> *Compared to the standard Mandarin in the north, I am definitely not as good. But I probably don' t have the* ***sweet potato accent*** *of Xiamen. (Lin (2018); Speaker02, Female, 18yo)* (6)

> *Xiamen Mandarin is not quite standard compared to the inland and the north. (Lin (2018); Speaker20, Male, 24yo)* (7)

> *Xiamen (speakers) do not have a Taiwanese accent, at best they have a "sweet potato accent". (Lin (2018); Speaker07, Female, 18yo)* (8)

2.6.3 Place, gender, and Mandarin varieties

So far, the discussion of Mandarin varieties has focused predominantly on the dimensions of cultural capital and prestige. In this section, I will explore another important dimension along which the social meanings of these two Mandarin varieties differ – gender-related attributes.

Traditionally, gender-related attributes have been critical components of the cultural distinction between the North and the South. In a study on regional stereotypes in China, Eberhard interviewed 110 ethnically Chinese participants and concluded that Northerners were often described as "tall, strong, honest and brave", whereas the Southerners were often perceived as "small, delicate, smart and gentle" (Eberhard, 1965, p. 601). These physical and nonphysical traits conjointly reflect an ideology that associates Northerners with stereotypical masculinity and Southerners with stereotypical femininity.

Such gender association persists in the social perception of regional Mandarin varieties. In the abovementioned perceptual dialectology study, Xu and Mao (2017) found similar attributes associated with Northern and Southern accents of Mandarin. Specifically, Northern accents were often marked as "rough, tough, loud/noisy", whereas the Southern accents were perceived as "soft, sweet, and sissy-like" (C. Xu & Mao, 2017, p.179). These labels were shared among participants from both the North and the South. Of the four maps presented in the paper, all feminine traits ("soft, sissy-like, and sweet") were specifically attributed to Fujian and/or Taiwan. This perception is consistent with the public discourse on Taiwan Mandarin in the mainland (C. Xu & Mao, 2017). Taiwanese females are often perceived as prone to perform *sajiao*, an infantilized hyper-feminine style that has salient linguistic and extra-linguistic features (M. K. Chan & Lin, in press). The linguistic correlates of this style are found in several linguistic domains including address terms, sentence-final particles and phonology (M. K. Chan & Lin, in press; Chuang, 2005; Farris, 1995; Yueh, 2017). Phonetically, it is associated with the use of high pitch, sentence-final lengthening, and nasal voice (Hardeman-Guthrie, 2016).

As discussed in Section 2.6.1, mobile Xiamen speakers in Beijing were often perceived as having a "Taiwanese accent". In the ethnographic interview, I asked the participants how they would interpret this label if others used it to comment on their accent. Of the 32 participants, 17 believed that it had positive connotations, 13 took it as a neutral label, and only two stated that it had negative meanings. Among the responses that recognized "Taiwanese accent" as a positive label, three main themes could be identified: regional pride (N=4), trendiness (N=4), and femininity (N=3).

(9)
是褒义的我觉得。而且可能本身这种比较柔软的语气跟我会比较符合，不是那种差异很大的就还好。

It's positive, I think. Perhaps it's because this kind of soft tone suits me well. It's not like there is a big gap. (Kathy, female, senior)

The following quotes illustrate the close connection between femininity and the mobile Xiamen participants' accent. In quote 9, Kathy explained that her accent was well-received due to the fact that its perceived softness was in harmony with her personality. On the contrary, Jennifer, in quote 10 took issue with the gap between the social perception of her accent and her own personality. The association between the persona of a *sajiao*-prone girl and the "Taiwanese accent" had led some of Jennifer's northern friends to believe that she, too, was being coquettish when speaking with her native variety of Mandarin. Using the English loanword "man" [5], she argued that her accent was in fact more masculine compared to some of her peers back home.

[5]This is a common use of the loanword among Chinese youth, meaning "manly" or "masculine".

Jennifer: 有一些北方人会听不惯这个声音，就会觉得你很作，你在装。但其实没有在装，而且我觉得我声音已经很 *man* 了。我觉得跟她们比我已经很 *man* 了，跟一些同学比我已经很 *man* 了。

Jennifer: Some northerners are not used to hearing this accent. They think that you are being coquettish and that you are faking it. But I am not. And I think my voice is already very ***man****. I think I am already very* ***man*** *compared to them, compared to some of my old classmates.*

Yuhan: 我懂你的意思。

Yuhan: I see what you mean.

Jennifer：但是他们就不相信。

Jennifer: But they just don't believe me.

(Jennifer, female, senior) (The bolded parts were originally in English.)

(10)

Judith's comments in quote 11 delved into the different perceptions of the southern accent for female and male speakers. Without any prompt about gender, she noted that her classmates thought the southern accent sounded pleasant for female speakers. When I followed up with a question about male speakers, she shared her own view that male speakers who used a thick Southern Min accent could come off as provincial-sounding. It is interesting that although the conversation revolved around the social perception of the same linguistic variety, it was referenced differently and associated with different social meanings when used by female vs. male speakers. This gender difference roughly corresponds to the two sets of distinctions discussed in Section 2.6.1. Female Xiamen speakers were described as having a "southern accent", which is ideologically linked to the soft and gentle qualities of southerners. In contrast, accented Xiamen male speakers were framed as having a "Southern Min accent", which triggers the image of the accented Fujianese, much like the character portrayed in the comic skit. Although it would be problematic to generalize this perception to all male Xiamen speakers, it is at least an example that shows that speaker gender could have an impact on how Xiamen Mandarin is perceived in Beijing.

Yuhan: 你的同学有怎么评价过你的普通话吗？

Yuhan: Have your classmates commented on your Mandarin accent?

Judith: 普通话吗？他们就是，就是说很标准，可是就，很不那个... 他们觉得挺好听，他们觉得南方话挺好听的。觉得女生讲这种就很好，就好听。

Judith: Mandarin accent? They think it's standard, but it's not... They think the southern accent sounds pleasant. They think it's good for a girl to speak with this accent, it sounds pleasant.

Yuhan: 那比如说男生讲这种？

Yuhan: What about when guys speak like this?

Judith: 他们认识的南方男生就...

Judith: Well, the southern guys that they know.

Yuhan: 不多？

Yuhan：*Not many?*

Judith: 对，然后就可能... 反正我就会觉得有点土，带太多这种闽南腔的男生说话真的很土。

Judith: Yes, and perhaps... Anyway I think it's a bit provincial. Those guys who speak with too much Southern Min accent sound very provincial.

(Judith, female, sophomore)

(11)

2.7 Internal migration in China

Before discussing the pattern of internal migration in China, it is necessarily to introduce the *hukou*, or household registration system, which serves to regulate geographic mobility within China. Established in 1951, the system requires every citizen to be registered with one and only one *hukou*. A *hukou* is of either an "agricultural" or "non-agricultural" type, and the location of the residence is either urban or rural (K. W. Chan, 2009; K. W. Chan & Zhang, 1999). A change in the type or residence location on the *hukou* requires governmental permissions which are rarely granted. Since China began its economic reform in the 1980s, the country has witnesses an unprecedented wave of internal migration (International Labour Organization, n.d.): in 2006, the number of "floating population", namely, people

who live outside the residence indicated on their *hukou*, reached 200 million (K. W. Chan, 2011). A majority of this population is constituted of migrants from rural to urban regions, particularly metropolitan cities like Beijing, Shanghai, Guangzhou, and Shenzhen, as well as from the inland to the eastern coastal regions.

This phenomenon of rural-urban migration in China has attracted a considerable amount of interest in different fields of social sciences (Dong, 2011, 2016; Fan, 2007; Gaetano & Jacka, 2004; Wallis, 2015; Woronov, 2004). Of particular relevance to the present study is Dong's (2009; 2011; 2016) work that highlights the importance of language in the establishment of a migrant identity in contemporary Chinese society. Taking a linguistic anthropological approach, Dong examined two groups of migrants that differ in their social status: *nongmingong*, or migrant workers, who come from rural areas and take blue-collar jobs, and the so-called "elite migrants" who relocate to metropoles for education and employment and form a new urban middle class. Dong noted a stark distinction in the level of social pressure there is for the two groups of speakers to conform to the local norms. For the blue-collar migrant workers and their children, their linguistic production is often the target of correction, and that they "often feel they are being 'silenced' and becoming 'voice-less' because of their accents" (Dong, 2016, p. 69). In contrast, the elite migrants to some extent are free from the constraint of the local linguistic norms. Rather, they seem to have more flexibility in selecting linguistic resources that serve to fulfill their social and aesthetic needs. For example, in one of the interviews, a male elite migrant from the Northeast discussed his reluctance to learn Shanghainese, the regionalect of Shanghai, despite having stayed in the city for more than a decade. He perceived Shanghainese as not "masculine" enough, and found attempts to integrate into the local community through acquiring the language too deliberate. Despite these differences, the two groups do share an orientation towards upward mobility, making them "the elite members of their respective social layer" (Dong, 2016, p. 68). Their aspiration for better opportunities has a considerable impact on their language use. For the migrant workers and their children, it can be the acquisition of

Mandarin, the *lingua franca* of urban life. For the elite migrants, the languages of mobility include a variety of Mandarin that incorporates elements of "Hong Kong-Taiwan accent", as well as foreign languages, indexing a kind of mobility that is not confined simply to the Chinese mainland.

2.8 Migrant college students in China

As a result of the *hukou* system, minors in China often tend to stay in their hometown through compulsory education. College, then, marks for many the first time they leave home for an extended period of time. Due to the highly uneven distribution of higher education institutions, inter-provincial migration is rather common among Chinese college students. In 2010, for instance, the number of students who attended a college outside their home province accounted for 22.4% of the total national enrollment (Y. Liu, Shen, Xu, & Wang, 2017). A majority of this population flows to Beijing, Shanghai, and the eastern coastal regions (Y. Liu et al., 2017; L. Wang, 2011). Beijing is a particularly popular destination as it is home to 26 *benyi* (literally "undergraduate first batch"), or top-ranking colleges, accounting for 26.3% of the national total. In order to compensate for the unequal educational resources in different regions, the admission to *benyi* colleges is strictly regulated so that the number of recruits from each province is roughly in proportion to its population size. [6] Consequently, college students in these schools often have classmates or even roommates from both the North and the South. In other words, it is in college that many of these young migrants obtain first-hand experience regarding the long-standing linguistic and cultural divide between these two ideologically charged places.

Indeed, the North-South distinction has always been one of the hot topics on college campuses. Figure 2.7 shows the title and the introductory section of a news article posted by the social media account *Changsha Xiaoyuan* "campuses in Changsha", an account that

[6] However, regardless of the population size, the number of local recruits is generally higher than the number of recruits from any other given province (L. Wang, 2011).

上了大学才知道，南北方差异竟这么大！

2017-02-25 21:32

南北方差异竟然相差这么大，我和我的小伙伴们都惊呆了！

●●●

大学宿舍像是一个藏龙卧虎的江湖

南来的北往的全带着一身绝技入驻

北方人听不懂南方人谜一样的方言

南方同学也惊惧于北方澡堂的豪放

It was not until I was in college did I realize there was so much difference between the North and the South!

The difference between the North and the South was so big that my pals and I are all shocked!

College norms are full of hidden talents

Those from the North and the South move in with their unique skills

Northerners can't understand the mysterious Southern dialects

Southerners are appalled by the boldness of the Northern public baths

Figure 2.7: Title and introduction of a news article on the North-South divide in college (Translation by Yuhan Lin)

targets college students in Changsha, the capital city of Hunan province in southern China (Changsha Xiaoyuan, 2017). This article exemplifies dozens of online discussions that are dedicated to the North-South distinctions that become salient as students from different regions interact with each other in college. The article discusses the North-South distinction in three broad categorizes: living habits, cuisine, and language use, and provides several examples for each category. In the category of cuisine, many examples are in fact concerned with the lexical variation in food names: cauliflower is known as *cai.hua* in the North, but as *hua.cai* in the South; the Northerners use *mo.gu* as a generic name for mushrooms, whereas Southerners often have names for specific types of mushrooms. As in many other articles, when it comes to language use, the difference in regionalects always constitutes an important part of the conversation. Figure 2.8 is an internet meme included in the abovementioned article that reflects the ideology of the uniform Northern varieties and the diverse Southern varieties. The meme implies that the entire Northeast shares the same regionalect, whereas the regionalect in a town in Hunan is unintelligible even to its neighbors. There are also different versions of this meme where Hunan is replaced with other Southern regions like Chaoshan, Fujian, and Hainan, where the local regionalects are mutually unintelligible to *Putonghua*.

These differences correspond well to the commentary from the mobile Xiamen college students. In the ethnographic interview of the production study, 32 participants were asked to comment on the differences they noticed between the North and the South. Most responses centered around four domains: cuisine (N=19), language (N=15), personality traits (N=15) as well as rituals and living habits (N=11), similar to the post presented above. Given the fact that the responses clustered around these few domains, it is reasonable to argue that the mobile Xiamen Mandarin speakers have some shared understanding of the cultural distinction between the two places. Of most relevance to the current study is the discussion on language and personality, and I will focus on the latter here. As shown in quote 12 and many other responses, northerners are often described as blunt, or *zhí.shuǎng*,

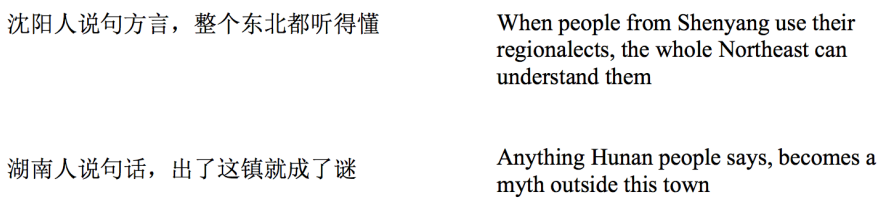


Figure 2.8: An Internet meme on the Northern and Southern regionalects (Translation by Yuhan Lin)

while southerners are said to more diplomatic, or *wéi.wǎn* in their expression. Along the same lines, the participants also believed northerners to be more outgoing and southerners more introverted, as indicated in quote 13. In brief, with regard to personality traits, the most salient North-South distinction lies in the dimension of expressiveness.

> 北方人可能不管男生女生都比较直，我们南方人喜欢委婉地表述我们的想法。
> *Northerners, both male and female, are more blunt. Us southerners like to express our thoughts more diplomatically. (Grace, female, senior)* (12)

> 他们性格也会豪爽一点，大部分嘛。比较外向一些，然后我们南方就大部分还是比较内向一些的。
> *They [northerners] are more forthright, most of them. They are more outgoing. But us southerners are for the most part more introverted. (Kevin, male, sophomore)* (13)

In sum, by virtue of the admission policy for *benyi* colleges in China, students in these schools are often mobile speakers from all over the country. The encounters with their fellow students allow them to develop new understandings as well as evaluate their existing ideas about the North-South divide that occupies an important place in the Chinese popular discourse. Since the linguistic differences are critical components of this divide, when a mobile speaker identifies themselves culturally with the North or the South, the regional linguistic features become a valuable resource that can signal their positions. This dissertation examines *benyi* colleges in Beijing, as the city absorbs the greatest amount of mobile college students (Y. Liu et al., 2017). Additionally, since mobile speakers from different regions likely perceive the North-South divide in different ways and associate the Northern

and Southern varieties with different social meanings (Niedzielski & Preston, 2000; Preston, 1989), I focus on the language use and language ideology of mobile students from Xiamen, a coastal city in Southern China.

Chapter 3

Linguistic Features

In this chapter, I discuss the three linguistic variables that I analyze in this dissertation, /s/-/ʂ/ contrast, neutral tone, and /w/->[ʊ], in terms of their geographic and social distribution, linguistic constraints, and social meaning. However, before going into the detail about the variables, a discussion about the motivation for selecting these variables is in order.

3.1 Rationale for feature selection

As discussed in Chapter 2, for the relocated Xiamen speakers in Beijing, the D1 is Xiamen Mandarin and the D2 is Northern Mandarin. Therefore, in order to examine whether highlighting place-related differences affects the relocated speakers' stylistic use and social perception, it is crucial to focus on features that differentiate Xiamen and Northern Mandarin. The lack of contrast between the denti-alveolar /s/ and the retroflex /ʂ/ is widely found in Southern regional Mandarin varieties, including Xiamen Mandarin (P. Chen, 1999; Y. Lin, 2018). On the other hand, neutral tone (P. Chen, 1999; M. Hu, 1986; Y.-H. Lin, 2007) and /w/->[ʊ] the (F. Wang, 2007) are features that are commonly found in Northern Mandarin varieties, yet rarely seen in Xiamen Mandarin.

In addition to the geographic distribution of these features, the selection of these features is also motivated by the attested place-related indexical meaning in the context of Beijing and Xiamen. In my previous work on non-mobile Xiamen speakers (Y. Lin, 2018), I asked the participants to name linguistic features that differentiate Xiamen and Northern Mandarin. Among the 34 speakers, 19 mentioned that Xiamen Mandarin does not have

the distinction between the denti-alveolar and retroflex sibilants. This finding suggests that the /s/-/ʂ/ contrast is closely associated with the North-South divide. Additionally, as discussed in Zhang's (Q. Zhang, 2017) work on how young Northern speakers incorporate a taste of "Hong Kong-Taiwan accent" into their *Putonghua*, de-retroflexion and the use of full tone for neutral tone are the two popular candidates. We can thus conclude that in the North, the /s/-/ʂ/ contrast and neutral tone are closely linked to the North-South distinction.

In contrast, /w/->[ʊ] is a much less known feature of Northern Mandarin despite its prevalence. Among Northern speakers, this feature is below the level of consciousness (Shen, 1987). The comparison of the stylistic use and social perception of this variable and the other two variables can shed light on whether overt awareness is an important factor in the acquisition and/or use of a D2.

Furthermore, another important rationale for selecting the /s/-/ʂ/ contrast and neutral tone lie in the different realizations for Northern Mandarin and *Putonghua*, which may help to disentangle the multiple social meanings associated with Northern Mandarin. As discussed in Chapter 2, the relationship between Northern Mandarin and *Putonghua* is best described as a continuum given the significant overlap between the two varieties. However, for these two variables, there exist variants that are not considered a part of *Putonghua*. For the retroflex /ʂ/, Northern Mandarin speakers sometimes lenite the sibilant as a rhotic approximant /ɹ/ in casual speech (P. Chen, 1999; Pankhurst, 2012; Q. Zhang, 2005). Furthermore, compared to the prescribed standard in the dictionary (*Xiandai hanyu cidian [Contemporary Chinese Dictionary]*, 2012), Northern Mandarin speakers tend to realize more words with neutral tone. In this case, the use of /ɹ/ for retroflex sibilants and the neutral tone realization of full tone words in *Putonghua* can index a regional Northern identity that is not necessarily standard or prestigious. Therefore, the examination of the extent to which relocated Xiamen speakers adopt these more regional realizations can help understand how different social meaning of Northern Mandarin are relevant to their place-based

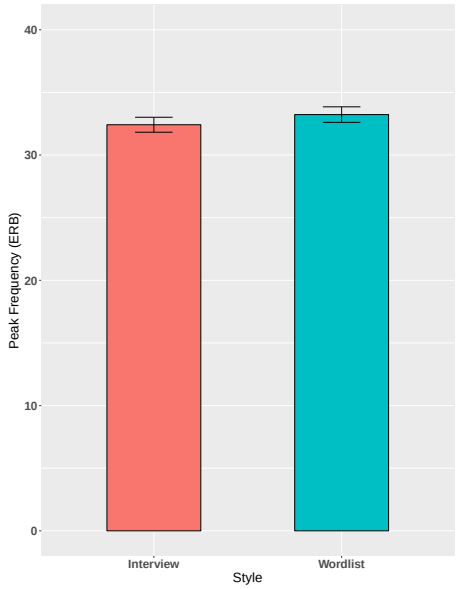
identities.

3.2 /s/-/ʂ/ production

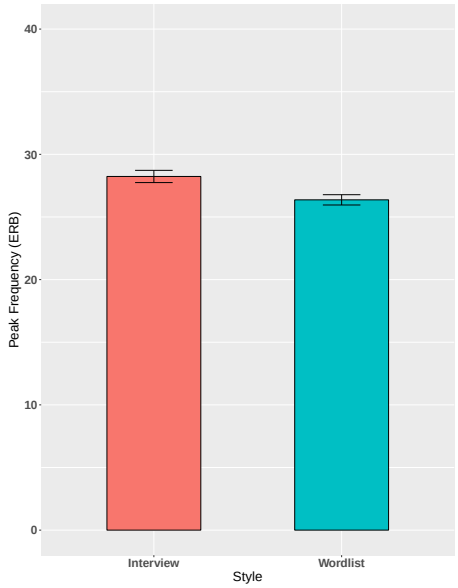
In *Putonghua* as well as many Northern Mandarin varieties (Peking University, 1989), there is a phonemic distinction between denti-alveolar fricative /s/ and retroflex /ʂ/. In Xiamen Mandarin, Chen (1987) noted that speakers often produced [s] for a [ʂ] target due to the influence of the local Southern Min dialect, which does not have any retroflex phones. Nonetheless, in a more recent description of Xiamen Mandarin based on data from the *Putonghua* proficiency test, Wang (2010) stated that when producing /ʂ/, most speakers no longer used [s], but the constriction was often in between alveolar and the hard palate instead of at the front of the hard palate. In addition, in my recent work (Y. Lin, 2018), I showed that Xiamen Mandarin speakers below age 30 tended to have a clear contrast between /s/ and /ʂ/, although auditory coding suggested that their sibilant production is not quite like that in Northern Mandarin and *Putonghua*. In Xiamen Mandarin, /s/ is often more back and /ʂ/ more front than in Northern Mandarin *Putonghua*.

The production of the two sibilants in Xiamen Mandarin is also subject to stylistic variation. I re-analyzed the /s/ and /ʂ/ production of 18 non-mobile young Xiamen speakers (9 18 yo and 9 25-26 yo) from Lin (2018), comparing their wordlist and interview speech. Figure 3.1 shows the effect of style, which was significant for both /s/ and /ʂ/. Here, place of articulation is measured with peak frequency, which correlates negatively to the backness of the constriction. As as shown on the plot, compared to the interview style, Xiamen speakers generally had a fronter /s/ and backer /ʂ/ in the wordlist style.

In Northern Mandarin, there is another variant for both /s/ and /ʂ/, which is lenited and realized as the retroflex approximant [ɹ] (Pankhurst, 2012; Q. Zhang, 2005). This lenited realization occurs word-medially and across word boundaries. Zhang (2005) showed that this variant is associated with a local persona in Beijing: the "smooth operator", someone



(a) Peak frequency for /s/ in wordlist and interview



(b) Peak frequency for /ʂ/ in wordlist and interview

Figure 3.1: Peak frequency (ERB) of /s/ and /ʂ/ by young Xiamen Mandarin speakers (N=18) in interview and wordlist. Error bars represent standard error.

who is street-smart. However, as illustrated by the meme on "Beijing dialect" in Chapter 2, in recent years, this feature might have become associated with local Beijing speakers in general. This lenited variant is not present in *Putonghua* or Xiamen Mandarin. In my QP2 study on Xiamen Mandarin (Lin 2016), I did not find any occurrence of this variant in the wordlist data, and only once in the interview with a high school student who claimed to had often been mistaken as a northerner in Xiamen. In short, the [ɹ] variant is a regional feature of Northern Mandarin.

In short, in production, if Xiamen speakers were to adopt a more Northern Mandarin-like pattern in one style than another, we would expect to see more front /s/ production and more back /ʂ/ production, and [ɹ] could be used for /s/ or /ʂ/ as well.

3.3 Neutral tone

In *Putonghua*, there are four lexical tones, or full tones (high-level tone, rising tone, low tone, and high-falling tone). Some syllables in non-initial positions can also be produced with weak stress, or neutral tone, when preceded by a full-tone syllable. Such syllables are characterized by "shorter duration, and weakening of syllabic distinctness and tonal contour" (P. Chen, 1999, p.40).

Neutral tone is categorical in two contexts: 1) in certain function words including the perfective marker *le*, durative marker *zhe*, and possesive/nominalizer *de*, etc. and 2) in a few tonal minimal pairs. [1] Example 9 shows such a minimal contrast between *dōng.**xī*** and *dōng.**xi***: the full tone variant means "east and west", whereas the neutral tone variant means "thing or stuff". These neutral tone words only make up only a small portion of the Mandarin lexicon. Zhu (2005) identified 2300 disyllabic words that were annotated with a neutral-tone in Contemporary Chinese Dictionary (*Xiandai Hanyu Cidian*) (2002), of which only 170 words could form such tonal minimal pairs. Aside from these two contexts, the

[1] However, it is worth noting that, in my data, Xiamen speakers do sometimes use full tone for function words and tonal minimal pairs as well.

Morphological types	**Examples**
Reduplicative	*mā.ma* mother˜RED "mom"
Grammatical	*gē.zi* pigeon-DIM "pigeon"
Irregular	*chōu.ti* "drawer"

Table 3.1: Three morphological types of neutral tone words

occurrence of neutral tone in most words is subject to variation with a full tone. This study will restrict the analysis to this third type of distribution where the variation between a neutral tone and a full tone realization does not affect the semantic meaning of the lexical item.

(9) a. Full tone: 东西 *dōng.**xī*** "east and west"

b. Neutral tone: 东西 *dōng.**xi*** "thing, stuff"

The occurrence of neutral-tone is lexically conditioned. Neutral-tone syllables often fall in one of the following three morphological types: 1) reduplicated syllables, 2) a small group of suffixes, and 3) the second syllables of certain disyllabic content words (Chao, 1968; K. Huang, 2012; Y.-H. Lin, 2007; C. Zhou, 2006; Zhu, 2005). Table 3.1 illustrates these three types. For the reduplicatives, the second syllable is the reduplication of the first, as is in *mā.ma* 'mom'. The grammatical type refers to the words that include a small group of suffixes that are often produced with a neutral tone. For example, the word for "pigeon" consists of the morpheme *gē* "pigeon" and a diminutive suffix *zi*. Similarly, words that contain the same suffix like *jú.zi* "orange", *tù.zi* "rabbit", and *xiāng.zi* "box" are all realized with a neutral tone. Words that fall in the irregular type are ones that do not share any morphological components. The grammatical and irregular types are most commonly found, each accounting for above 40% of all neutral-tone syllables (2006).

Frequency of Neutral Tone Realization	**Number of Words**
<=2	22
3-6	16
>=7	11

Table 3.2: Relationship between frequency of neutral-tone realization and lexical items (wordlist data from non-mobile young Xiamen Mandarin speakers (N=14))

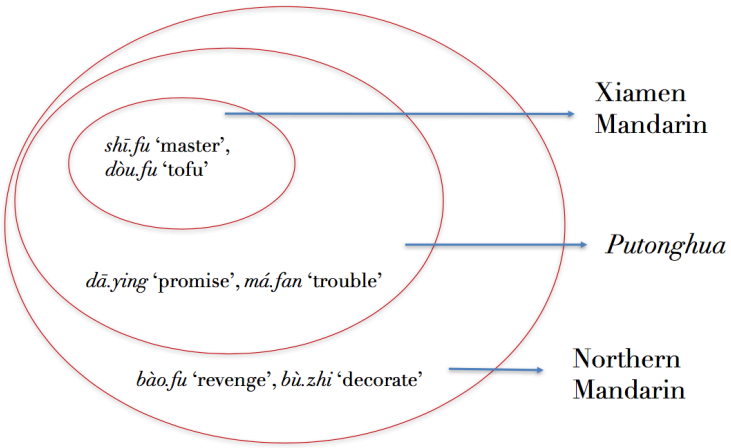


Figure 3.2: Lexical conditions of neutral tone in different Mandarin varieties

The crucial difference in the use of neutral tone between Xiamen Mandarin, Northern Mandarin, and *Putonghua* lies in the different lexical conditions as illustrated in Figure 3.2. Of the three varieties, Xiamen Mandarin has the fewest neutral tone words, *Putonghua* has more, and Northern Mandarin has the most. In addition, as indicated in the graph, there is a relationship of entailment in the lexical conditions of neutral tone among the three Mandarin varieties: if a word receives neutral tone in Xiamen Mandarin (e.g. shī.fu 'master') it would also be a neutral tone word in *Putonghua* and Northern Mandarin. In Contemporary Chinese Dictionary (Xiandai Hanyu Cidian) (2002), one of the most authoritative Chinese dictionaries, around 3100 words are labeled with a neutral tone, accounting for 5% of its inventory (Zhu, 2005). Northern Mandarin often has a more expanded inventory of neutral-tone words than *Putonghua* (P. Chen, 1999; Y.-H. Lin, 2007; Q. Zhang, 2005; C. Zhou, 2006). In Lu' s (1995) neutral-tone wordlist for Beijing Mandarin, for example, he included 1713 lexical items in total, 341 of which were not listed in the edition of the Contemporary Chinese Dictionary published in 1973. In Xiamen Mandarin, the use of neutral tone is limited to a smaller set of lexical items than suggested in the dictionary. Of the wordlist data in my second qualifying paper, I found that on average only 28.6% of the 49 neutral-tone words were realized with a neutral tone among 14 high school speakers. On average, each of the 49 words was realized by four speakers with a neutral tone. Despite this low mean value, as shown in Table 3.2, 11 words were realized with a neutral tone by more than half of the participants. Of these 11 words, 3 were grammatical, 2 were reduplicative, and 6 were irregular. This finding shows that although overall neutral-tone is only produced in a limited number of words, these Xiamen speakers seem to have some shared understanding of the prescribed lexical condition for neutral tone.

In short, in production, if Xiamen speakers were to adopt a more Northern Mandarin-like pattern in one style than another, we would expect to see an increase in the neutral tone use. In addition, if Xiamen speakers embrace a Northern regional identity, they would likely also produce neutral tone tokens in lexical conditions that are exclusive to Northern

Mandarin.

3.4 /w/->[ʋ]

In Northern Mandarin and *Putonghua*, there are three glides that can occur in zero onset position, namely, /j/, /ɥ/ and /w/. However, some speakers realize the labial-velar approximant /w/ as a labiodental approximant [ʋ], when followed by unrounded vowels (M. Hu, 1991a; Shen, 1987; F. Wang, 2007; J. Zhou, 2003).

This feature is commonly found in Northern Mandarin. In a study that examines this feature across different regions in China, Wang (2007) found that Northern speakers from seven provinces produced more than 50% of the /w/ sounds following unrounded vowels as [ʋ]. Shen (1987) also conducted a large-scale study that investigates this feature in urban and suburban Beijing, and found that younger speakers and those with high education levels were more likely to use [ʋ]. This [ʋ] variant is not introduced as part of *Putonghua* in dictionaries or textbooks. In *Pinyin*, the official alphabetical system of Mandarin, "w" is the only symbol used to represent the phoneme [w], and this alphabet does not have the symbol "v" . Despite its absence from the prescribed standard, the [ʋ] realization is often found in broadcast speech on China Central Television, the major state television station in China based in Beijing (J. Zhou, 2003). Therefore, using the terminologies I introduced in Section 2.3, the [ʋ] variant is found in **practiced *Putonghua***, but not in **codified *Putonghua***. In Xiamen Mandarin, the [ʋ] realization is very rare. In the abovementioned study, Wang (2007) sampled speakers from Zhangzhou, Fujian, a Southern Min-speaking city bordering Xiamen, and found that only less than 5% of the /w/ tokens were realized as [ʋ]. In the wordlist data I collected for my second qualifying paper among non-mobile young Xiamen speakers, I found only 4 of 520 initial /w/ tokens realized as [ʋ].

It is also worth noting that this feature is likely a recent development, and a change in progress. Lin (2001) noted that [ʋ] was not very common in the speech of *Lao Beijing*

"old Beijing" , people whose family has lived in Beijing for generations. Shen (1987) also considered this sound change to be internally motivated rather than externally imposed. As Labov (1994) famously argued, internally motivated language changes, or changes from below, often happen below the level of consciousness. Although the specific social awareness of this variable remains underexplored, the fact that none of studies I have read about Northern Mandarin varieties provided any native speaker commentary on the phenomenon can be interpreted as indirect evidence that /w/→/ʊ/ is at least not one of the well-known features of Northern Mandarin despite its prevalence.

In short, if Xiamen speakers were to adopt a more Northern Mandarin-like pattern in one style than another, we would expect to see more [ʊ] realization of /w/. In addition, if overt awareness has an important effect on the use of a second dialect, we would expect that the effect size for this factor is smaller than the other two variables.

3.5 Summary

Table 3.3 shows a summary of the variants for each of the three variables discussed in this chapter. For each variable, it lays out how different variants are associated with the three varieties of interest in the present study: Xiamen Mandarin, *Putonghua* and Northern Mandarin. For the /s/-/ʂ/ contrast, the Xiamen Mandarin variants are backed [s] and fronted [ʂ], *Putonghua* and Northern Mandarin both have denti-alveolar [s] and retroflex [ʂ]. In casual speech, Northern Mandarin speakers also use [ɹ]. For neutral tone, the Xiamen Mandarin variant is full tone. Both *Putonghua* and Northern Mandarin have the neutral tone variant, although the two varieties differ in the lexical conditions of neutral-tone syllables. Northern Mandarin has a more expanded inventory of neutral-tone words, including the ones in *Putonghua*. The method of differentiating between *Putonghua* and Northern Mandarin-exclusive neutral tone words is discussed in details in Section 4.1.2 in Chapter 4. For /w/ → /ʊ/, as discussed above, whether [ʊ] would considered part of

	/s/	/ʂ/	**Neutral tone**	/w/->**[ʊ]**
Xiamen Mandarin	back [s]	front [ʂ]	full tone	[w]
Putonghua and Northern Mandarin	denti-alveolar [s]	retroflex [ʂ]	neutral tone (*Putonghua* condition)	[ʊ]
Northern Mandarin-exclusive	retroflex approx-imant [ɹ]	retroflex approx-imant [ɹ]	neutral tone (Northern Mandarin-exclusive condition)	[ʊ]

Table 3.3: Distribution of variants for /s/-/ʂ/ production, neutral tone, and /w/->[ʊ] in Xiamen Mandarin, *Putonghua*, and Northern Mandarin

Putonghua depends on the criteria we use to define the variety. Therefore, the [ʊ] is listed as the *Putonghua* and Northern Mandarin variant, as well as the Northern Mandarin-exclusive variant in Table 3.3.

the Xiamen Mandarin variant is [w], and the *Putonghua* and Northern Mandarin variant is [ʊ].

Chapter 4

Methodology

In Chapter 1, I motivated two research questions: 1) How do internal migrants establish their place-based identities across different situations? 2) How do internal migrants perceive their D1 and D2?

To answer these questions, this dissertation examines the stylistic variation and social perception of a group of geographically mobile speakers. Specifically, it examines Xiamen Mandarin speakers who have (temporarily) moved to Beijing for higher education. This study consisted of a production study and a social perception study. The production study was designed to examine the stylistic variation for D2 speakers when "place", which in this context refers to the distinction between the D1 and D2 community, was highlighted. In one case, "place" was emphasized via the manipulation of the regional background of the audience. In the other, the topic of the reading materials differ in their place-related semantic content. Additionally, an ethnographic interview was conducted to understand their connections to the D1 and D2 communities as well as their explicit language attitudes. The social perception study was designed to examine their implicit attitudes towards different linguistic variables that distinguish their D1 and D2.

In this chapter, I will first introduce the methodology used in the production study. The population is discussed in Section 4.1.1, I then motivate and explain the different tasks in Section 4.1.2-4.1.6, and introduce the method for data processing. Section 4.2 covers the methodology for the perception study, including stimuli, experiment procedure, as well as the data analysis.

4.1 The Production Study

In order to closely examine the relationship between Xiamen speakers' orientation towards Xiamen and Beijing as well as Xiamen Mandarin and Northern Mandarin, this work compares speakers' linguistic production when the two places are foregrounded. Specifically, "place" is highlighted in two ways: the regional background of the interlocutors (Xiamen vs. Northern), and place-based topics (Xiamen vs. Beijing).

4.1.1 The population

The focal participants in the study were Xiamen Mandarin speakers who were enrolled in universities in Beijing. As is shown in previous research, the prestige of higher education institutions can affect college students' use of their regional linguistic features as well as the prescribed national standard (Prichard, 2016; Wagner, 2012). In order to minimize such an effect, I controlled for the type of colleges which the participants attended. In China, colleges are divided into three batches [1] that differ in terms of admission priority. *Benyi*, or undergraduate first batch institutions were granted top priority. Partially funded by the central governments, these institutions are required to admit students from every province in the country, and have strict quotas with regard to the number of admitted students from each province (Y. Liu et al., 2017; Yao, Wu, Su, & Wang, 2010). Therefore, the student body in these schools is often composed of students from all over the country. In contrast, *bener* "undergraduate second batch" or *bensan* "undergraduate third batch" institutions are often funded by the provincial and municipal governments, and thus tend to exhibit a preference for local students. Given these admission policies, I limited my recruitment only to those who were enrolled in *benyi* institutions as they formed the majority of Xiamen college students in Beijing. In Beijing, there are 26 *benyi* institutions, with approximately 800 Xiamen students in total.

[1] In some provinces, this system has been changed to one that distinguishes only two batches.

As a result of the admission policy, the number of students from a given province in *benyi* colleges is often proportional to the population size of that province. Since Northern Mandarin-speaking regions constitute one third of all provinces in China, Northern Mandarin-speaking students usually make up a considerable portion of the student body. Additionally, in many other regions, especially those in the South, the regional Mandarin varieties are much more diverse as a result of substratum influence (Thomason & Kaufman, 1988). As a result, Northern Mandarin has become a dominant Mandarin variety on campus.

For example, in 2015, Peking University, one of the most prestigious universities in China, planned to admit 42.58% of its freshman class from Northern Mandarin-speaking provinces, of which 29.11% would come from Beijing. This campus demographics ensures that mobile Xiamen students usually have Northern classmates and acquaintances. It is also common for them to have Northern dormmates, with whom they typically share the same living space for four years [2]. In addition, in China, students in the same major will be broken into different *banji* "class", and those in the same *banji* will take all the required courses together. Therefore, the ties between Xiamen speakers and their Northern friends can be multiplex (Milroy, 1980).

The participants

Data collection for the production study was conducted in Beijing from late August to early October in 2016. A brief description of this study was disseminated from three threads for recruitment. During my fieldwork in Xiamen in 2015, I interviewed some high school seniors, who became sophomores in college at the time of this data collection. I asked them to spread the word, and used a friend-of-a-friend approach to get in touch with Xiamen speakers in different school years. I also contacted an existing inter-collegiate student society for Xiamen students in Beijing universities and asked them to put the recruitment post on their social

[2] It is typical for college students in China to live in dorms, since campus housing is much more reasonably priced than the alternatives.

media account. Some of my relatives and friends in Xiamen also helped me get in touch with potential participants of this study.

Thirty-nine mobile Xiamen students were recruited as the focal participants in the production study, all of whom had been in Xiamen since elementary school. In order to participate in the friend-with-friend conversation task, which is discussed in details in Section 4.1.2, they also brought along a friend from Xiamen and a friend from the North. The focal participants and friends were recruited from 10 *benyi* universities. The study was conducted in empty classrooms or quiet coffee shops. Participants were recorded with Shure SM10A headworn microphones into a Zoom H4n handy recorder. The friend and the focal participant were recorded into separate channels (mono) of the same recording. The only exceptions were seven ethnographic interviews which were recorded into an iPhone using the PCM Recorder mkII app. In both cases, the sampling rate was set to 44100Hz.

Data from eight participants were excluded from the analysis. Participant KF0201 failed to complete the Xiamen friend conversation task. KF0213's Northern friend was not a native speaker of Mandarin. KM0204 came to Xiamen since middle school, and did not consider himself as "someone from Xiamen". Recordings from KF0205, KF0207, KF0303, KM0222, KM0302 had too much ambient noise for the acoustic analysis.

As a result, production data from thirty-one focal participants was analyzed. As is indicated in Table 4.1, the sample is balanced by gender and school year. No freshmen were recruited because data collection began in the beginning of a school year, and they likely had not yet formed strong friendship with Northern Mandarin speakers. Junior and senior were collapsed together as one school year category partially due to the practical difficulty of recruiting juniors - only two focal participants were juniors. However, they also differed from the sophomores with regard to the main focus of their lives: while the former had started working towards their post-graduation plan, the latter tended to be mostly concerned with their coursework or student organization activities. In addition, several participants explicitly commented that they used to pay much attention to their accent in

	Sophomore	Junior and Senior
Female	8	9
Male	7	7

Table 4.1: Distribution of focal Xiamen participants（N=31）by gender and school year

the first year, and have stopped doing so since. Therefore, it is also worthwhile to examine the sophomores separately from the juniors.

In terms of language background, 20 focal participants self-reported as speakers of Southern Min, and four others could comprehend the regionalect. Additionally, there were three Hakka speakers and two Wu speakers. Regarding the variables examined for this study, the substratum influence from these two regionalects would not lead to different predictions compared to the Southern Min speakers. Two other participants could not speak or comprehend any regionalects. However, it is worth noting that, as discussed in Chapter 2.5.1, the *lingua franca* in Xiamen is Xiamen Mandarin. Therefore, even the self-reported Southern Min speakers likely only used it with families and some of their friends. [3]

Each focal participant partook in dyadic conversations with two friend participants, one from Xiamen and one from the North, respectively. In some cases, the same Xiamen Mandarin speaker served both as the focal participant as well as the Xiamen friend of another focal participant. An illustration of the different roles for the Xiamen participants is shown in Figure 4.1. In comparison 1, Jack was analyzed as the focal Xiamen participant, and Thomas was his Xiamen friend. In comparison 2, Thomas became the focal participant, and Jack was treated as his Xiamen friend. This was the situation with 16 out of the 31 comparisons. A majority of the Xiamen friends knew the focal participants from middle school or high school (N=23). This pattern was representative of mobile Xiamen speakers in Beijing since most of them graduated from one of the four highly competitive schools in Xiamen. The other eight Xiamen friends met the focal participants in college. As for the

[3]Some speakers reported being able to speak or comprehend multiple regionalects. Only their dominant regionalect is listed here.

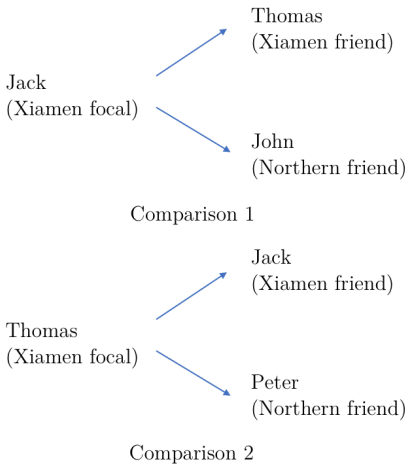


Figure 4.1: An illustration of Xiamen participant roles

Northern friends, most of the them were roommates (N=21) or classmates (N=7) of the focal participants, and only four got to know the participants on other occasions. Figure 4.2 shows the birthplace of the Northern friends. The red dots on the map is meant to indicate the province where the participants were from, not the exact city. All Northern friends were monolingual Northern Mandarin speakers. [4]

4.1.2 Audience-based Style Shift

Friend-with-friend conversation

In order to examine how the regional background of interlocutors affect mobile Xiamen students' use of Northern Mandarin features, the focal Xiamen participants were asked to engage in two dyadic conversation sessions, once with a friend from Xiamen and once with a friend from the North. The key comparison for this task was how focal speakers' production differs during their interactions with the two friends. The production of the Northern friends was also analyzed for the three linguistic variables of interest to establish

[4]Some provinces marked on Figure 4.2 (e.g. Xinjiang, Inner Mongolia, and Shanxi) had multilingual communities, but all participants included here were from monolingual Northern Mandarin-speaking communities.

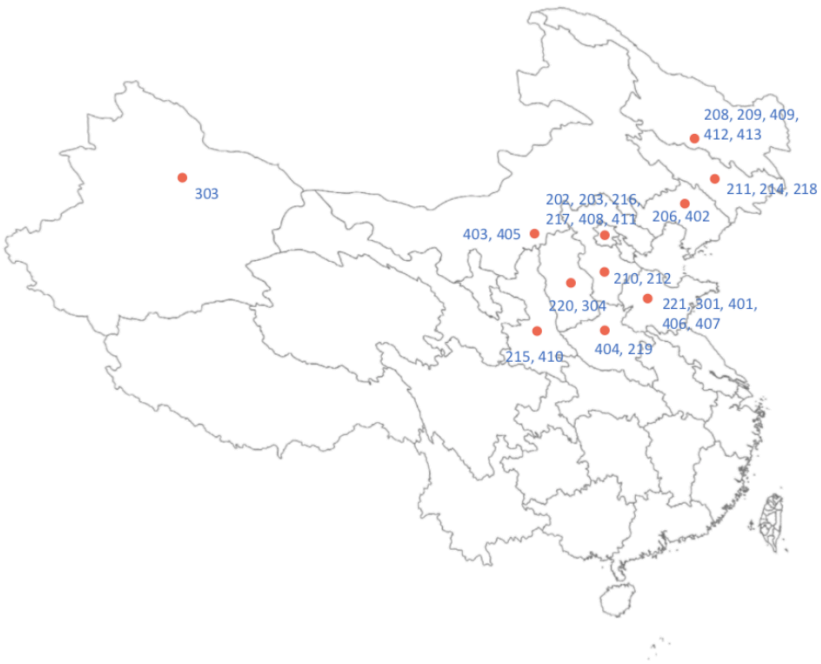


Figure 4.2: Birthplace of Northern friends

a baseline for Northern Mandarin against which relocated Xiamen speakers' production was compared.

Before the beginning of the conversation task, I helped the participants set up the recorder and microphones. I then collected the demographic information of both participants, including age, sex, school year, parental occupation, and language background. The questions are listed in Appendix B. All participants picked pseudonyms from a list of English names. After that, I would leave the room or sit several tables away from the participants.

In the conversation task, the pairs of friends were instructed to chat for approximately 30 minutes. In order to make sure that the topics of conversation remain roughly comparable across different pairs, all participants were given a list of prompt questions. They were also allowed to skip questions and digress at times to keep the flow of the conversation. Each list contained three topic types, namely, 1) school life, 2) personal traits and experience, and 3) hobbies and interests. In order to make the task less repetitive for the focal Xiamen

participants, who had to discuss the same topic types twice, two versions of prompts were used (see Versions A and B in Appendix C). The two versions of prompts covered the same topic types with different questions. The pairing of prompt version and the regional background of the friends were balanced. For most pairs of friends, the conversation revolved around the prompt questions, with occasional digressions to mostly campus life-related topics.

Wordlist

After each conversation session, the focal Xiamen participants read the same wordlist containing 210 disyllabic words (See Appendix A for the full list) written in Chinese characters in the presence of their friends. The wordlist task was designed elicit the focal participants' production when more attention is paid to speech (Labov, 1972). The choices of the words are explained below.

/s/-/ʂ/ contrast In the wordlist, there were 36 disyllabic words containing /s/ as the onset, and the words were balanced by syllable position. Within each syllable position, I balanced three following vowel conditions: /u/, /a/, and /i/. Similarly, there were 36 disyllabic words containing the onset /ʂ/, balanced by two syllable positions and the same three following vowels as for /s/.

Neutral tone As discussed in Section 3.3, the occurrence of neutral tone is lexically conditioned in Mandarin, and the lexical conditions differ between *Putonghua* and Northern Mandarin. In Northern Mandarin, certain full-tone words in *Putonghua* can also be realized with neutral tone. The neutral tone realization for this group of words has the potential to index characteristics associated Northern speakers beyond prestige or standard. In order to test whether the dialect source (i.e. *Putonghua* vs. Northern Mandarin) of the lexical items affect mobile Xiamen speakers' use of neutral tone, I balanced the dialect resource of the neutral tone words (N=75) in the wordlist task.

The lexically-conditioned nature of this phonological variation presented a challenge for adherence to the principle of accountability (Labov, 1972) since the description of the lexical conditions often vary across different sources. Therefore, a discussion of how the lexicon condition for *Putonghua* and Northern Mandarin was determined is in order. For the *Putonghua* lexical condition list (N=1438), the identification of neutral-tone words was based on the pronunciation listed in the latest edition (6th edition) of Contemporary Chinese Dictionary, or *Xiandai Hanyu Cidian* published in 2012. This source was chosen over other dictionaries because it was used as the reference for the state-administered college entrance exam, and thus was likely also used as the reference in secondary eduction. Given that written guidelines on pronunciation tend to represent slightly more conservative norms than what is commonly agreed upon among contemporary speakers, I used the most up-to-date description available here.

The Northern Mandarin-exclusive lexical condition list (N=630) was based on Lu's (1995) work on Beijing Mandarin. Lu (1995) compiled a list of neutral tone words in Beijing Mandarin (N=1713), and identified ones that were also considered neutral tone in *Putonghua* (N=1372). He used the first edition of Contemporary Chinese Dictionary published in 1973 as the reference for *Putonghua*. However, given that it has been four decades since the publication of the first edition, it might not be an ideal representation of the prescribed standard for neutral tone in *Putonghua*. Therefore, I checked how all the words in Lu's (1995) list were labeled in the 6th edition of Contemporary Chinese Dictionary, and categorized them into three categories based on their pronunciation labels in both editions, as shown in Table 4.2. Three hundred and forty-one words are labeled as full tone in both editions ("Beijing" in Table 4.2, indicating that neutral tone realization of these words are not part of *Putonghua* phonology; 1083 words were labeled as neutral tone in both editions, indicating that the neutral tone realization continue to exist in contemporary *Putonghua*. However, 289 words that were labeled neutral tone in the first edition are now labeled full tone in the sixth edition, a result that corroborates previously documented decrease in

	1st edition of Contemporary Chinese Dictionary (1973)	6th edition of Contemporary Chinese Dictionary (2012)
Beijing (N=341)	Full Tone	Full Tone
Old *Putonghua* (N=289)	Neutral Tone	Full Tone
Contemporary *Putonghua* (N=1083)	Neutral Tone	Neutral Tone

Table 4.2: Three categories of neutral tone words in Lu's (1995) list (N=1713) based on the pronunciation indicated in the first and sixth edition of Contemporary Chinese Dictionary. The shaded categories were considered the Northern Mandarin-exclusive lexicon condition.

neutral tone words in the same dictionary over time (Jing, 2002). Since the neutral tone realization of these words are no longer part of *Putonghua* phonology, I list them as "Old *Putonghua*" words in Table 4.2. The Northern Mandarin-exclusive lexicon condition list (N=630) constitutes of both the "Beijing" and "Old *Putonghua*" words as indicated in the shaded area in Table 4.2.

In the wordlist, I included 35 disyllabic neutral-tone words from the *Putonghua* list, of which 15 were grammatical, 5 were reduplicative, and 15 were irregular. Additionally, I included 30 disyllabic neutral-tone words from the Northern Mandarin-exclusive list, of which 15 were grammatical and 15 were irregular. Since reduplicative neutral-tone words in Northern Mandarin largely overlap with those in *Putonghua*, no additional reduplicative words were included.

/w/ → [ʊ] The wordlist included 48 disyllabic words containing an initial /w/, balanced for syllable position. Within each syllable position, I included three words for each of the possible syllable structures involving /w/, except for /wəŋ/, which is highly infrequent in Mandarin. Specifically, syllable structures included were /wo/, /wu/, /wən/, /wei/, /wan/, /wɑŋ/, /wai/, and /wa/.

Fillers The list also contained 29 filler words to divert participants' attention from the variables of interest.

In sum, the wordlist consisted of 36 words for /s/, 36 for /ʂ/, 35 for *Putonghua* neutral tone, 30 for Northern Mandarin-exclusive neutral tone, 48 words for /w/ → /ʊ/, and 29 fillers. Each disyllabic word only contained one variable of interest. The order of the words were pseudo-randomized so that words featuring the same variable did not occur consecutively. The semantic content of the wordlist was kept neutral without association with Xiamen or Beijing.

4.1.3 Topic-based Style Shift

In addition to investigating place-based identity through the comparison of relocated speakers' production in the presence of interloctuors from different regional background, this study also examined how place-based topics affected their use of D2. This effect was examined through comparing Xiamen focal participants' production in reading passages about their D1 and D2-speaking communities, that is to say, Xiamen and Beijing.

Only focal Xiamen participants took part in the reading passage task. They read the two passages from a piece of paper in front of me, a fellow Xiamen Mandarin speaker. The two reading passages were phrased as introductions to Xiamen and Beijing respectively. All participants read the Xiamen passage followed by the Beijing passage. A reading passage task tends to draw speakers' attention to their speech, and thus leads to an increase in the use of more standard variants, which would be the D2 variants in the case of this study. Given this fact, the Beijing passage was positioned after the Xiamen passage to avoid the introduction of potential carry-over effect that favors D2 variants. In each passage, 15 multisyllabic words containing /ʂ/, /s/ and /w/ respectively were included, and 20 multisyllabic words containing neutral tone syllables were included. Of the 20 neutral tone words, half fell

in the *Putonghua* lexicon condition and the other half in the Northern Mandarin-exclusive lexical condition. See Appendix D for the details of the reading passages.

4.1.4 Ethnographic Interview

After the reading task, I conducted ethnographic interviews with the focal Xiamen participants to learn about their college experience and language ideologies. The interviews aimed to collect useful information for the coding of social factors in the production study, and for the design of the social perception study. The interview schedule can be found in Appendix E.

As shown in Appendix E, the interview questions were organized into three sections based on their roles in the analysis: 1) for evaluating place-related attitudes in the quantitative analysis of the production data, 2) for collecting local stereotypes and styles that could inform the design of the social perception study, and 3) for understanding the structure of the participants' ties to the D1- and D2-speaking communities. The questions were asked following approximately this order.

In the first section, I inquired about the focal participants' motivation for coming to Beijing and their opinions on living in Beijing as someone from Xiamen. They then completed a map task where they indicated the dividing line between the North and the South on a map of the Chinese mainland and Taiwan, and discussed the differences between the two regions. Additionally, the participants were invited to share their opinions on Xiamen Mandarin, Taiwan Mandarin, Northern Mandarin and *Putonghua*, as well as on linguistic accommodation. In this part, the participants also completed a map task in which they indicated where in the Chinese mainland and Taiwan they perceived the locals to have an accent similar to theirs. This section allowed me to obtain participants' explicit commentary on their experiences as a mobile Xiamen speaker in Beijing. The next section included college-specific questions with the intention to gain some understanding of salient stereotypes and personae in the context of college. I invited them to comment on the differences

between students in different colleges and majors, as well as salient types of college students. In the last section, the participants completed a task designed to investigate the make up their friendship circle. First, they were instructed to list 10 of their best friends. Then they were asked to identify where each friend was from (North, Xiamen, or South but not Xiamen), and where they met the friend (college/Beijing, Xiamen, elsewhere).

4.1.5 Order of tasks

For the focal Xiamen speakers, it generally took around two hours to complete all the tasks in the production study. In addition, the design of the friend-with-friend conversation also required that they coordinated with two friends. I understood that it would take some significant amount of time and effort to make each session possible. Therefore, in order to accommodate to their needs, I tried to conduct different parts of the study in an order that fit their schedules the best. This meant that sometimes (N=14) I had to conduct the ethnographic interview before or between the production tasks (i.e. the two friend-with-friend conversation + wordlist, and the passage reading), which might have heightened their awareness of their linguistic performances. However, the very design of having the focal participants bring their Xiamen and Northern friend to a linguistic study had also given away the importance of place in the current study. Furthermore, since the production study was designed to foreground "place", revealing this information would likely not affect the results in a negative way. Sixteen of the participants conversed with their Xiamen friend first, and 15 talked to their Northern friend first. The factor of order was tested in the statistical models (See Section 5.1).

4.1.6 Northern Mandarin Control Data

Given the design described in Sections 4.1.2 and 4.1.3, I hypothesize that the relocated focal Xiamen participants would show more Northern Mandarin-like production when talking to their Northern friends, or when reading the passage about Beijing. In order to test

these hypotheses, it is crucial to establish a baseline of Northern Mandarin against which the production by Xiamen speakers could be compared. To that end, I have collected data from Northern Mandarin-speaking college students and recent graduates using the same production tasks mentioned above. As mobile speakers themselves, these Northern Mandarin speakers' production might have been influenced by other Mandarin varieties, or even their Xiamen friends, and thus differed to some extent from that of their non-mobile counterparts. However, since their Northern Mandarin production was representative of what the Xiamen participants were exposed to in Beijing colleges, it could be taken as a sensible baseline.

For the friend-with-friend conversation, I simply analyzed two thirds of the data produced by the Northern friend (F=14, M=8). I selected the Northern speakers based on the date of participation, and balanced by the gender of the focal Xiamen Mandarin speakers. Since the female Northern participants in the study outnumbered the male Northern participants in general, the sample turned out to reflect this pattern. I did not, however, ask the Northern friend to read the same wordlist after the conversation task. I was concerned that the formal nature of the wordlist reading task and the standard status of Northern Mandarin might trigger explicit or targeted imitation on the part of the focal Xiamen participants.

Therefore, for the wordlist and the reading passage, I collected production data from another group of Northern Mandarin speakers (N=12) as control. All of the control participants were either international students at The Ohio State University (F=7, M=3) or professionals who had obtained post-graduate degrees from American colleges (F=1, M=1). Although these speakers had been living in an English-dominant environment, they resembled their counterparts in Chinese colleges in that they likely had been exposed to a range of Mandarin varieties since it is rather common to meet students from different parts of China in the international student community.

4.1.7 Coding Linguistic Variables

Linguistic data processing

Production data was first transcribed in Chinese orthography using ELAN ("ELAN", 2018), and then converted to *Pinyin* using the Adso Chinese Translation and Annotation Engine (Lancashire, 2011). The resulting texts in *Pinyin* orthography were then time-aligned using the Penn Phonetics Lab Forced Aligner for English (Yuan & Liberman, 2008). Since the aligner was trained using the acoustic data in English, I adapted the dictionary that maps Chinese words in *Pinyin* representations to phonetic strings. The mapping was taken from Callier's (2013) work in which this same aligner was used to align Beijing Mandarin data. Callier's (2013) test case based on 100 segments for 16 speakers respectively suggested that the alignments for glides and obstruents were both highly reliable – the rates of correct alignment were 90.97% and 73.65%. The aligner was also adapted to include a tier for Chinese characters in the output TextGrid files. Segmentation from the aligner was hand-corrected for words including the three linguistic variables of interest.

/s/-/ʂ/ contrast

For the friend-with-friend conversation data, I conducted acoustic analysis of the first 30 tokens of the phoneme /s/ and /ʂ/ respectively. For the wordlist and reading passage, I analyzed all tokens of /s/ and /ʂ/.

As noted in Section 3.2. in Chapter 3, in Northern Mandarin, /ʂ/ could be realized as a retroflex [ʂ] or lenited to a retroflex approximant [ɹ]. Since these two variants could not had distinct acoustic properties that could not be measured by the same metric, they were analyzed separately. I first conducted auditory coding and inspection of spectrograms to distinguish the sibilant tokens from the approximant ones. Specifically, the presence of high frequency noise was considered an indicator of sibilants (Reetz & Jongman, 2011), and the

presence of formant structures, particularly close F2 and F3 values were taken as acoustic correlates of [ɹ] (R. Liao & Shi, 1987).

Sibilants For the wordlist and reading passage, all sibilant realizations of /s/ and /ʂ/ were included in the acoustic analysis. For the conversation data, I selected the first 30 sibilant realizations of the two phonemes for the acoustic analysis whenever possible. All tokens that included the character 是 *shi* 'be' were excluded, for fear that the high frequency of this word would skew the effects in ways that were difficult to predict. The place of articulation of the sibilant tokens was measured using peak frequency of the frication noise. In order to obtain a better estimate of the spectral properties than the conventional Fourier analysis, I applied the multitaper spectrum technique (Thomson, 1982) using a set of R packages developed by Reidy (2015). The multitaper spectrum technique can be understood as process that takes several uncorrelated periodogram-estimates of each token and then averages them pointwise (Reidy, 2015, p. 18). In the case of the current study, eight estimates of the periodogram of the sibilant noise were made for each token. After applying the multitaper spectrum technique to each sibilant token, an estimate of spectrum was obtained, which was then used to calculate the peak frequency for each token. All the peak frequencies in Hertz were converted to ERB in order to obtain better representation of the sounds in the psychoacoustic space. Peak frequency was positively correlated with the frontness of the place of articulation for sibilants. Therefore, high peak frequency for /s/ and low peak frequency for /ʂ/ suggested the use of more *Putonghua*/Northern Mandarin-like production.

Retroflex approximants In the process of auditory coding, it became clear that the approximant variant [ɹ] was much less common than the sibilant ones, and it was likely the case that there would not be enough tokens from each stylistic condition (i.e. interlocutor origin or place-based topics) for robust regression analysis. Also, it was often the case that the variant only occurred in several phrases where the lenited variant is often heard in Northern Mandarin: for example, *bù.zhī.dào* "NEG-know" [pu.tʂɹ.tɑu], or *jiu.shi* "to be

exactly" [tɕjou.ʂɻ]. Therefore, I restricted the analysis of the [ɻ] to only its occurrence in these types of phrases. In order to establish a reasonable environment for this analysis, I referenced the use of the [ɻ] variant in the conversational data from the Northern friends. Specifically, I coded the first twenty tokens of [ɻ] in each Northern participant's production when applicable, and noted down the words they occurred in. The first five most common words were taken as the potential environments where the focal Xiamen participants could use the [ɻ]. In total, 216 lenited tokens were found in the Northern conversation data. The five most common words were 就是 *jiu.shi* "that is", 其实 *qi.shi* "in fact", 还是 *hai.shi* "hai.shi", -时候 *shi.hou* "when" [5], and 多少 *duo.shao* "how much (many)". I then looked for the first 30 tokens of these words in the transcribed conversation data, and coded each token as approximant or sibilant.

Neutral tone

For the friend-with-friend conversation, I coded the neutral tone realization in the potential lexical conditions in the first 30 minutes of the conversation. I used a Python script to search the transcribed conversational data for words in the *Putonghua* lexical condition list (N=1438) and the Northern Mandarin-exclusive lexical condition list (N=630) (See the neutral tone part of Section 4.1.2 for detailed discussion). I then coded the first 20 potential neutral-tone words in each list. Therefore, the dependent variable in the statistical model was the presence or absence of neutral tone realization for each of the 40 potential neutral-tone words. For the wordlist and reading passage, I analyzed all tokens of neutral tone.

I first conducted auditory coding and inspection of spectrograms to determine the presence or absence of neutral tone. Acoustic analysis was not conducted as it required far more data than it was available in the sample. Since the pitch value of neutral tone is largely dependent on that of the preceding lexical tones, in order to make sensible intra-speaker and inter-speaker comparison, for each speaker in each style, four comparisons need to be made,

[5]This entry refers to case when 时候 *shi.hou* was produced immediately after a morpheme. For example, in words like 小时候 *xiao.shi.hou* "when I was young"

one for each preceding lexical tone-neutral tone pair. For example, to compare how speaker A produces neutral-tone syllables differently when talking about different places (Xiamen vs. Beijing), we need to compare Tone 1-Neutral Tone, Tone 2-Neutral Tone, Tone 3-Neutral Tone, and Tone 4-Neutral Tone pairs between the two topic conditions separately. This method would require, for each preceding tone-neutral tone pair, approximately 20 to 30 tokens. This requirement was almost impossible to meet in the conversation task given the overall low occurrence of neutral-tone syllables, and the fact that it is a second dialect variant for Xiamen speakers.

Although neutral tone is not phonemic in the lexical conditions examined here, previous research has shown that speakers were able to perceive the differences between lexical tones and neutral tones (T. Lin, 1985; T. Lin & Wang, 1984; y. Wang, 2004). Some important perceptual cues to distinguish the lexical and neutral tones are duration, amplitude, the beginning pitch value, and pitch contour (T. Lin, 1985; T. Lin & Wang, 1984; y. Wang, 2004). I used some acoustic cues in the spectrogram to confirm my judgment, including duration, pitch range and different pitch contours based on the preceding tone. The duration in the lexical tone is usually shorter than the preceding lexical tone (W.-S. Lee & Zee, 2008; M. Lin & Yan, 1980). In Lee and Zee' s (2008) study on Beijing speakers, the preceding lexical-tone syllable is 1.87-2.07 time longer than the neutral-tone syllable. Neutral-tone syllables also tend to show a narrower pitch range than the preceding lexical-tone syllables (J. Cao, 1985; Chao, 1968; Y. Chen & Xu, 2006).

In an effort to avoid developing speaker-specific bias during the coding process, potential neutral tone words extracted from all speakers were divided into multiple subsets, and a Praat (Boersma & Weenink, 2018) script was used to display the words in random order for each subset. A Mandarin-speaking research assistant with phonetic training blind to the thesis also coded all the wordlist to ensure the quality of coding. Both coders completed the coding independently, and then compared notes. Tokens that were coded differently were examined together to resolve the differences. Table 4.3 shows the results of the intercoder

Agreement	Recoded as Neutral Tone	Recoded as Full Tone	Unresolved
3701 (89.66%)	219 (5.31%)	139 (3.37%)	69 (1.67%)

Table 4.3: Results of intercoder check

check. Of the 4128 words examined, the two coders gave the same results for 3701 words, reaching an inter-coder agreement of 89.66%. Among the 431 tokens that we disagreed about in the initial coding, 358 of them were successfully recoded as neutral tone or full tone upon discussion. Only 69 remained unresolved, but the majority of them (N=47) were of the reduplicative type, which were excluded in the statistical analysis due to the lower number of tokens compared to the other two types (i.e. grammatical and irreguar). Taking these factors into consideration, it is reasonable to say that most of the discrepancy in the initial coding was resolved. Given the high intercoder reliability, the neutral tone data in the reading passage and conversation data was only coded by me.

/w/→[ʊ]

For the friend-with-friend conversation, I acoustically analyzed the first 30 tokens of the phoneme /w/ in the conversation. For the wordlist and reading passage, I analyzed all tokens of /w/→[ʊ].

One of the most important differences in phonetic quality between the labio-velar [w] and labio-dental [ʊ] lies in the fact that the former is rounded while the latter is not. Rounding often significantly lowers the formant frequency of approximants (Reetz & Jongman, 2011). Wiener and Shih (2013) used F2 values of the approximant portion of the target syllable to measure the degree of rounding in the syllable - [w] would have lower F2 values than [ʊ]. They perceptually coded all the tokens into [w] or [ʊ], and tested the correlation between mean F2 value for each token and the perception-based grouping. T-test results showed

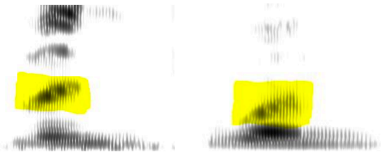


Figure 4.3: Spectrograms of [ʊən] (left) and [wən] (right) highlighting the lowering of F2, reproduced from Wiener and Shih (2013)

that mean F2 of the [w] group was significantly lower than the [ʊ] group. Figure 4.3 shows the two variants for the same syllable /wən/. While the F1 values are similar, F2 is much lower in [w] (right panel) than in [ʊ] (left panel). Based on these findings, I also used F2 to measure the degree of rounding for /w/ phonemes. However, since both male and female speakers were examined, a normalized measure of F2-F1 was adopted to normalize the effect of physiological differences. F1 and F2 values were extracted at the temporal midpoint automatically using a Praat script.

4.1.8 Coding Social Variables

Interlocutor regional background

The variable of audience background was included in the analysis of production data from the friend-with-friend conversation and wordlist reading task. Specifically, the audience background in each conversation session was coded as Northern or Xiamen according to their residential history. Before the conversation task, I asked the friends about their place of origin as well as where they grew up. All Northern friends were born and raised in the provinces shown in Figure 4.2. All Xiamen friends were raised in Xiamen.

Place-based topic

The variable of place-based topic was included in the analysis of the production data from the reading passages. The topic was coded as Beijing-themed or Xiamen-themed.

School year

As discussed in Section 4.1.1, the sample was balanced in terms of the school year of focal Xiamen participants: half were sophomores, and half were juniors and seniors. Therefore, the variable school year included two variants in the analysis: sophomores, and juniors and seniors. This variable was included in the statistical tests for all of the three production tasks.

Beijing Orientation

In order to test how focal speakers' explicit attitudes towards their D2-speaking community affect their production, the variable Beijing orientation was included in the statistical models for all three production tasks. As discussed in Section 4.1.4, several questions in the ethnographic interview were designed to understand focal speakers' attitudes towards Xiamen and Beijing as well as the relevant linguistic varieties. Specifically, the following questions aimed at eliciting participants' attitudes towards Beijing.

- Why did you choose to come to Beijing for college?
- What is your post-graduation plan? Do you plan to stay in Beijing?
- What is your impression of Beijing now?

Originally, I planned to develop a scale that encompasses the answers to all these questions. However, it became clear during the fieldwork that the answers to the first two questions were not very feasible for this purpose as many participants chose their undergraduate institutions or post-graduate plans based on their academic or career ambitions rather than their place-based attitudes. For example, several participants commented on the fact that there was not any other choice as Beijing was the only place in China that housed a substantial number of *benyi*-level colleges. Additionally, for their post-graduation plan, several participants chose to pursue postgraduate education overseas. While they

would end up leaving Beijing, it would be unreasonable to compare them with those who chose to stay in Beijing or go back to Xiamen, since the decision was mostly likely motivated by the more advanced educational resources than place-based identities.

Therefore, for the Beijing orientation variable, I coded only their answers to the question of "what is your impression of Beijing now". Specifically, I coded Beijing orientation into three categories: positive (+1), neutral (0), and negative (-1). Example 10 presents some sample quotes for each of the categories. As a result, 15 focal participants were coded as having positive Beijing orientation, seven as neutral, and seven as negative.

(10) a. Positive (+1) – "I already liked it before I came, and the impression keeps getting better."

b. Neutral (0) – "It's nice. There are plenty of job opportunities, but I won't consider settling down here"

c. Negative (-1) – "I don't have a sense of belonging. It still feels like I' m living in a foreign place."

4.2 The Social Perception Study

In order to investigate the social meaning of Northern and Xiamen Mandarin for relocated Xiamen speakers, a social perception experiment was conducted using an adapted version of the matched guise technique (Lambert, Hodgson, Gardner, & Fillenbaum, 1960). In the experiment, listeners rated two guises produced by the same group of talkers (N=6), one containing Xiamen Mandarin variants and the other containing Northern Mandarin variants. The comparison of the ratings for the two guises shed light on the social meanings associated with the two varieties, with a focus on the traits of status, solidarity, dynamism, and orientation towards Beijing (See Section 4.2.2 for details).

4.2.1 Stimuli

The stimuli for the social perception study were produced by six female Xiamen Mandarin talkers who had graduated from *benyi* colleges in Beijing. All of them were in their mid-twenties. The stimuli consisted of three short passages about campus life. I constructed them in a way that each passage contained only one of the three variables of interest and avoided the others. In each passage, there were ten tokens of the relevant linguistic variable.

Although the production study examined both /s/ and /ʂ/, only the retroflex phoneme was investigated in the social perception experiment. This choice was motivated by the analysis of the wordlist data prior to the experiment. Since both the stimuli and wordlist were read speech, they should be reasonably comparable in terms of the use of standard-sounding variants. Preliminary analysis of the wordlist data showed that audience regional background effect was a significant predictor for /ʂ/ but not for /s/, suggesting that the variation in /s/ might not be tied to place-based identity as strongly. Furthermore, there was a significant effect of gender for /s/: female speakers tended to produce more front, and thus standard-sounding tokens than male speakers. Since the talkers for the social perception experiment were all females, including retracted [s̠] variants might render the stimuli less natural.

Table 4.4 illustrates the variants for the Xiamen Mandarin and Northern Mandarin guises. For /ʂ/, the Xiamen Mandarin variant was fronted [ʂ̟] and the Northern Mandarin variant was retroflex [ʂ]. Although the lenited [ɹ] is also a Northern Mandarin variant for this feature, it did not occur in the wordlist data for the mobile Xiamen speakers or the Northern speaker control group. This pattern is unsurprising as previous literature also suggests that this variant occurs more often in casual speech (P. Chen, 1999). Therefore, given the more formal speech style of the stimuli, the lenited variant was not included. For neutral tone, the Xiamen Mandarin variant was full tone, and the Northern Mandarin variant was neutral tone. Of the ten tokens, five were from the *Putonghua* lexicon condition and the other five were from the Northern Mandarin-exclusive lexicon condition. For /w/ →

[ʊ], [w] was the Xiamen Mandarin variant and [ʊ] was the Northern Mandarin variant. Since the [ʊ] variant is unlikely to be realized when followed by a rounded vowel (M. Hu, 1991a; Shen, 1987; F. Wang, 2007; J. Zhou, 2003), all /w/ tokens in the passage were followed by unrounded vowels.

In the social perception study, *Putonghua* and Northern Mandarin were not distinguished for two reasons. First, for both /ʂ/ [6] and /w/ → [ʊ], the respective variants for *Putonghua* and Northern Mandarin were the same. In theory, it is possible to construct two passages for neutral tone, one consisting of words in the *Putonghua* lexicon condition, and the other including only words in the Northern Mandarin-exclusive lexicon condition, to compare the evaluation of the two varieties. However, this may lead the listeners to pay undue attention to neutral tone than the other variables given a greater amount of stimuli. Second, since *Putonghua* and Northern Mandarin have significant similarities and are distinct from Xiamen Mandarin, if listeners were to evaluate these three varieties all at once, the differences between Northern Mandarin and *Putonghua* ratings could potentially reach a ceiling as the listeners would have a much easier time distinguishing the Xiamen Mandarin guise from the other guises.

The materials for constructing the stimuli were recorded at the same time as the production study, but the talkers did not participate in the abovementioned production study. The speech was recorded into a Zoom H4n handy recorder with a head-mounted microphone. The recordings were all conducted in quiet indoor space. Prior to reading the passages, the talkers were informed of the purpose of this study, the linguistic variables and corresponding variants for each passage. All talkers read each passage four times, twice in Xiamen Mandarin, and twice in their best attempt at Northern Mandarin.

Using the speech samples from the six talkers, I constructed two guises for each variable. For the Xiamen guises, the passage readings that best represented the Xiamen Mandarin

[6] For /ʂ/, the distinction between *Putonghua* and Northern Mandarin lies in the existence of the variant lenited /ɹ/, which was not included in the stimuli as discussed in the previous paragraph.

	/ʂ/	**neutral tone**	/**w**/ → **[ʊ]**
Xiamen Mandarin	fronted [ʂ]	full tone	[w]
Northern Mandarin/*Putonghua*	retroflex [ʂ]	neutral tone	[ʊ]

Table 4.4: Variants for Xiamen Mandarin and Northern Mandarin/*Putonghua* guises

variants listed in Table 4.4 were selected. For the Northern Mandarin guises, I used the Xiamen Mandarin passages that featured the same linguistic variable as carrier passages, and spliced in Northern Mandarin the disyllabic words that carry the tokens for the variable of interest. For neutral tone, the entire disyllabic word is the token of interest, since the perception of a weak syllable is dependent on that of the preceding syllable. For /ʂ/ and /w/, the whole word instead of a single segment was chosen to preserve potential acoustic cues in the initial vocalic portion of the following segment as well as to maintain a more natural prosody. For Northern Mandarin, it has been shown that the mean frequency of fricative spectrum is the most prominent acoustic cue that distinguishes the denti-alveolar /s/, palatal /ɕ/, and retroflex /ʂ/, and the onset F2 of the following vowel for /ɕ/ is distinct from the other two sibilants (F. Li, 2008). However, since the Xiamen Mandarin variant for /ʂ/ is more fronted than the realization in Northern Mandarin, it could be worthwhile to preserve the formant transition alongside the frication in case the Xiamen listeners also make use of this cue. For the /w/ → [ʊ] variable, I am not aware of any work that has examined the acoustic cues in the perception of this phenomenon. Therefore, although the formant structures within the two approximants have been shown to have measurable differences (Wiener & Shih, 2013), I decided that it would be safer to provide more cues by presenting the entire syllable. The disyllaic words instead of the single syllable were used to avoid pitch manipulation. Since pitch manipulation was not feasible for neutral tone due to the importance of the pitch contour in its perception, I kept the pitch contour for the other variables as well to avoid undue attention to prosody.

Several other techniques were also employed to increase the naturalness of the resulting stimuli. First, the intensity for all passages in the two guises was adjusted to 70dB prior to the manipulation. Each token that was spliced in also matched the original token in intensity. Second, for [s̩] and [w], the duration of the spliced token matched the original one. For neutral tone, I first calculated the ratio between the first and the second syllable for the spliced token prior to manipulation, and measured the duration of the first syllable in the original token. I then matched the duration of the first syllable in the spliced token to that of the original token, and the set the duration of the second syllable in the spliced token according to the calculated ratio. Third, when copying and pasting the tokens, the boundaries were set at the zero crossing to minimize the perception of an abrupt change in the signal.

In this way, for each passage produced by each talker, the only difference between the Xiamen and Northern Mandarin guises was the realization of the variable of interest. This process resulted in six passages for each talker, three in the Xiamen Mandarin guise, and other three in the Northern Mandarin guise.

Table 4.5: Mean values of acoustic measures for each talker in each guise

Talkers	Peak frequency of /ʂ/ (ERB)		Duration ratio between syllables for Neutral Tone		F2-F1 at mid point for /w/ (Hz)	
	Northern	Xiamen	Northern	Xiamen	Northern	Xiamen
Talker1	24.78	26.94*	1.44	1.15.	1001	445*
Talker2	25.85	26.73*	1.22	1.04*	981	405*
Talker3	23.88	25.21*	1.46	0.97*	1103	431*
Talker4	25.38	30.94*	1.39	1.03*	889	597*
Talker5	23.14	25.51*	1.5	0.97*	980	420*
Talker6	26.74	28.33*	1.4	1.05*	944	398*

Symbols following the t-values indicate the associated p-value in the paired t-test: * $p < 0.05$, . $p < 0.1$

Table 4.5 shows the mean values of the acoustic measurements for the three variables in each guise. It also includes the statistical significance from the paired t-test I conducted to determine whether the differences between the two guises were significant. The asterisk next to the Xiamen guise indicates statistical significance between the pairs, and the dot indicates marginal significance. The first two columns report the mean peak frequency in ERB for /ʂ/ across all tokens in the guise. We can see that the Xiamen Mandarin guises all have higher mean peak frequency compared to the Northern Mandarin ones, indicating more fronted production of the sibilants. The paired t-tests confirmed that the mean differences were statistical significant.

Columns 3 and 4 show the mean values for the duration ratio between the first and the second syllable for the neutral tone words. Duration is one of the important acoustic cues

for the perception of neutral tone (See Section 4.1.7 for detailed discussion). For example, based on wordlist data from four Beijing Mandarin speakers, Lee and Zee (2008) found that the duration of the initial syllable was 1.32 - 1.5 times longer than that of the second syllable that was realized with a neutral tone. The paired t-tests showed that for most talkers the differences in the ratio between the two guises were significant, and for Talker1, it reached marginal significance ($p = 0.0722$). In addition to greater duration ratio, the neutral tone tokens in the Northern Mandarin guises often exhibited pitch contours that are different from their full tone counterparts in the Xiamen Mandarin guises, and the patterns are similar to what has been described in the previous literature (W.-S. Lee & Zee, 2008; T. Lin, 1985; y. Wang, 2004).

The last two columns present the difference between F2 and F1 at temporal midpoint for /w/. As discussed in Section 4.1.7, a crucial difference between [w] and [u] lies in the fact that the former involves lip rounding, resulting in the lowering of F2. The difference between F2 and F1 was used to minimize the impact of the physiological differences across talkers. As we can see, the mean values for the two guises are rather different, and the t-tests confirmed that the differences were significant.

4.2.2 Procedure

The experiment was hosted on the online survey platform Qualtrics. I reached out to the participants in the production study to disseminate the survey. Some of them might have participated in the perception study as well, although I was not able to track this information due to the anonymous design of this experiment. In the advertisement as well as in the introduction section of the survey, I stated that the participants for this study should fulfill two criteria: 1) had lived in Xiamen since at least middle school, and 2) were currently pursuing undergraduate education in Beijing or had graduated from a university in Beijing within the last two years.

Figure 4.4: Rating items

Order	Rating Items
1	Educatedness
2	Smart
3	Warm
4	Likable
5	Talkative
6	Energetic
7	Tend to *sajiao*
8	*Xueba*
9	Engages in many social activities
10	Have many northern friends
11	Can easily find a job in Beijing
12	Will stay in Beijing after graduation

Table 4.6: Translation of rating items

After the introductory page, the participants were directed to a page as shown in Figure 4.4. On top of the page, there was a play button for a sound file, with the volume adjustment panel to the side. Right below was the phrase "what is your impression of the talker? (please indicate the scores by sliding the bars)". Following the question were 12 rating items, each associated with a slider bar on a 0-100 scale. All rating items for the same talker were shown on the same page. Table 4.6 provides the translation for all rating items in the order they were presented.

The first six items were designed to reflect three dimensions of personality traits that were well-tested in previous research that adopted the matched-guise technique: status, solidarity, and dynamism (Zahn & Hopper, 1985). Specifically, "educatedness" and "smart" aimed to elicit ratings for the dimension of status, "warm" and "likable" for solidarity, and "talkative" and "energetic" for dynamism. The choice of these dimensions were also motivated by the social meanings of Northern and Xiamen Mandarin discussed in the existing literature as well as revealed in the metalinguistic commentary collected in the production study. Since Northern Mandarin serves as the base for *Putonghua*, it is expected that the Northern Mandarin variants would be associated with social status, as is often the case with standard

varieties. Metalinguistic commentary presented in Section 2.6.2 also confirms that local Xiamen speakers perceived Northern Mandarin to be more standard-sounding than Xiamen Mandarin. In contrast, the Xiamen Mandarin variants are expected to have higher ratings on items associated with solidarity, as they are used frequently by the participants' own in-group. As discussed in Section 2.8.1, the focal Xiamen participants' comments on the North-South difference with regard to personality traits can be boiled down to the issue of expressiveness: northerners are perceived as blunt and outgoing, whereas southerners are seen as diplomatic and introverted. Since the content of the reading passage remains the across the two guises, I did not include any rating item that examined the dichotomy of blunt vs. diplomatic, which likely corresponds more to the pragmatics than phonology. Instead, I used "talkative" and "energetic" to investigate the distinction between outgoing vs. introverted. If Northern Mandarin does remind the listeners of northerners in general, we would expect this guise to attract higher ratings for these two items compared to Xiamen Mandarin.

Items 7-9 were designed to examine whether the two varieties were associated with locally-relevant personality traits and persona. As discussed in Section 2.6.3, a salient persona associated with the Taiwanese female and the "Taiwanese accent" is the tendency to perform *sajiao*, an infantilized femininity style. Some metalinguistic commentary also suggested that the evaluation of mobile Xiamen college students' speech in Beijing by their northern friends could be influenced by the existence of such a stereotype. Since the stimuli in the experiment were produced by female talkers, I was interested in whether the manipulation of the linguistic variety could have an impact on how likely the talker was perceived with regard to this type of femininity. If the mobile Xiamen speakers shared the view with their northern friends, we would expect that the Xiamen Mandarin guise would receive higher ratings on this item.

As described in Section 4.1.4, as part of the ethnographic interview, I attempted to elicit some well-recognized social groups and/or personae in college in order to inform the rating

items. This task proved to be rather difficult. When asked to list common types of college students, the respondents often had a hard time coming up with answers immediately. However, most responses did touch upon two distinct persona. One is *xué.bà*, literally "academic overlord", which is the equivalence of an academic overachiever. The other is someone who engages in many extra-curricular activities. In Chinese colleges, it is typical for a freshman to join clubs or student unions as a member. However, only a small portion who are highly dedicated to an organization would continue to work as officers beyond their first year. Therefore, many respondents also identified this group of people as a distinct type. While these two personae are rather well-established in college, it is worth noting that language use is never mentioned in the description of them. This is not particularly surprising, given that there is likely no straightforward relationship between one's regional background and the priority in their life as a college student. However, Northern and Xiamen Mandarin may still be associated these two personae via indirect indexical links (Ochs, 1992). The persona of a *xué.bà*, or academic overachiever can involve a preference for the use of standard language, which, in the context of spoken language, would be more similar to Northern Mandarin than Xiamen Mandarin. Thus, I hypothesize that the Northern Mandarin guise would receive higher ratings for this item. For those who are active in extra-curricular activities, it is possible that the need to interact with peers from different regional backgrounds can motivate them to decrease their use of dialectal features and move toward a variety that is used more broadly. Therefore, I expect that the Northern Mandarin guise would be rated higher for this item.

The last three items were related to the talkers' perceived connection to the North and to Beijing. It is expected that the Northern Mandarin guise would receive higher ratings for all three items. In other words, when a talker uses the Northern Mandarin guise, she would be rated as more likely to have many northern friends, can more easily find a job in Beijing, and would be more likely to stay in Beijing after graduation.

Each participant listened to six stimuli and rated each one of them on these 12 rating

items. In the original matched-guise technique, each listener would hear two guises produced by the same talker alongside some filler stimuli in an attempt to lead the listeners to mistakenly believe that all stimuli are produced by different talkers. However, it could be difficult to confirm whether the manipulation with the talker identity was indeed successful. Therefore, this study used a between-subjects design: each listener heard only one guise from each talker, and the average responses for the two guises of the variable were compared. Table 4.7 presents the details of this design. The first column shows the names of talkers, and each of the remaining columns represents a list that a given listener could be randomly assigned to. Those who were assigned to list one heard the fronted, Xiamen Mandarin variant of [ʂ] from Talker1; and those who were assigned to list two heard the Northern Mandarin variant from the same talker. In the analysis, the effect of guise for Talker1 regarding the use of [ʂ] came from the comparison of ratings obtained from both lists.

In order to minimize the effect of order, I also adopted the Latin square design within each list. Table 4.8 demonstrates how this randomization method was carried out for the recordings in list one in Table 4.7. Each row in the table represents a sublist, which refers to a particular order that the same set of stimuli was presented to the listener. In all sublists, a guise in one variety was always preceded and followed by guises in the other variety. In addition, the first three recordings all included different variables, and the last three recordings repeated the variables in the same order. In sum, each listener was automatically assigned one of the 36 sublists.

After rating the six stimuli, the listeners completed a short questionnaire that elicited their demographic information as well as their explicit language attitudes. The participants were asked to provide information regarding their age, birthplace, the district of their middle school, gender, school year (freshman, sophomore, junior, senior, graduated under within one year, graduated within two years), major (humanities and social science, STEM and engineering, and others), and dialectal background (no dialect, Southern Min dialect,

	1	2	3	4	5	6
Talker1	fronted /ʂ/	retroflex /ʂ/	full tone	neutral tone	[w]	[ʊ]
Talker2	retroflex /ʂ/	fronted /ʂ/	neutral tone	full tone	[ʊ]	[w]
Talker3	[w]	[ʊ]	fronted /ʂ/	retroflex /ʂ/	full tone	neutral tone
Talker4	[ʊ]	[w]	retroflex /ʂ/	fronted /ʂ/	neutral tone	full tone
Talker5	full tone	neutral tone	[w]	[ʊ]	fronted /ʂ/	retroflex /ʂ/
Talker6	neutral tone	full tone	[ʊ]	[w]	retroflex /ʂ/	fronted /ʂ/

Table 4.7: Lists for listener rating

	Sublist
1	Talker1-XM-/ʂ/, Talker4-NM-WV, Talker5-XM-NT, Talker2-NM-/ʂ/, Talker3-XM-WV, Talker6-NM-NT
2	Talker4-NM-WV, Talker5-XM-NT, Talker2-NM-/ʂ/, Talker3-XM-WV, Talker6-NM-NT, Talker1-XM-/ʂ/
3	Talker5-XM-NT, Talker2-NM-/ʂ/, Talker3-XM-WV, Talker6-NM-NT, Talker1-XM-/ʂ/, Talker4-NM-WV
4	Talker2-NM-/ʂ/, Talker3-XM-WV, Talker6-NM-NT, Talker1-XM-/ʂ/, Talker4-NM-WV, Talker5-XM-NT
5	Talker3-XM-WV, Talker6-NM-NT, Talker1-XM-/ʂ/, Talker4-NM-WV, Talker5-XM-NT, Talker2-NM-/ʂ/
6	Talker6-NM-NT, Talker1-XM-/ʂ/, Talker4-NM-WV, Talker5-XM-NT, Talker2-NM-/ʂ/, Talker3-XM-WV

Table 4.8: Latin square design for list one

and other dialect). The explicit language attitudes were examined through their agreement with the 11 statements shown in Table 4.9. Similar to the rating task, the participants also indicated their responses on a 0-100 scale slider bar. The first six statements were designed to investigate the participants' view on the social status and pleasantness of Northern Mandarin, Xiamen-accented Mandarin and the Taiwanese accent, respectively, corresponding to the status- and solidarity-related items in the rating task. Statement 7 was motivated by the fact that most participants in the production study shared the experience of receiving comments on their "Taiwanese accent" in Beijing. Since the difference between Xiamen-accented Mandarin and the Taiwanese accent is often erased (Irvine & Gal, 2000) in Beijing, it was expected that listeners who were more likely to agree with this statement would favor the Xiamen Mandarin guise in general. Statements 8 and 9 delved into the issue of dialect shifting from different angles. The former framed Xiamen speakers' language use in Beijing as a matter of choice, foregrounding the role of speaker agency in second dialect use. The latter, on the other hand, focused on the self-perceived limit of one's linguistic flexibility. If a listener showed more positive attitudes towards shifting their dialect for either statement, they might not give considerably lower ratings for the Northern Mandarin guise. Statement 10 probed participants' opinions on standard language ideology. Given the potential social meaning of standardness for Northern Mandarin, it was expected that the participants' view on this issue could affect their ratings on the status-related traits. The last statement was not directly related to language, but rather the participants' career and life plans. I would expect that those who plan to return to Xiamen would favor the Xiamen Mandarin guise overall.

4.2.3 Data Analysis

Altogether, 120 participants completed the survey on Qualtrics. Responses from five participants were excluded due to the fact that they were born and raised in places outside Xiamen. Additionally, since the majority of the respondents were born in Fujian, I also

Order	Language attitude questions
1	I think Northern Mandarin has high social status.
2	I think Xiamen-accented Mandarin has high social status.
3	I think the Taiwanese accent has high social status.
4	I think Northern Mandarin sounds pleasant.
5	I think Xiamen-accented Mandarin sounds pleasant.
6	I think the Taiwanese accent sounds pleasant.
7	I feel happy when others say that I have a Taiwanese accent.
8	When I'm in Beijing, I don't want to change my accent.
9	I learn a new accent very fast.
10	I think it is important to use standard pronunciation.
11	I plan to return to Xiamen in the future.

Table 4.9: Language attitude questions

excluded responses from 11 participants who were born outside the province and moved to Xiamen before middle school. As a result, 104 responses were analyzed. Seventy participants identified as female, and 34 as male. In terms of school year, 8 participants were freshmen, 15 were sophomores, 46 were juniors, 15 were seniors, 14 graduated from college with one year, and 6 graduated from college within two years. Seventy participants speak Southern Min, 7 speak other subvarieties of Min, and 27 others are monolingual Xiamen Mandarin speakers. Eighty-three respondents were born in Xiamen, and 21 were born elsewhere in Fujian. I included respondents who were not born in Xiamen as well as speakers who do not speak Southern Min for two reasons. First, the three features I manipulated in the experiment had the same variants for the Mandarin variety used in Fujian in general: it is common for Mandarin speakers in Fujian to realize a fronted /ʂ/ (L. Li, 2013; R. Li, 1988), use full tone rather than neutral tone (R. Li, 1988), and use [w] instead of [ʊ] (F. Wang, 2007). Thus, all participants' vernacular (Labov, 1972) is likely closer to the Xiamen Mandarin guise than the Northern Mandarin guise. Furthermore, as I discussed in Section 2.1.1, Xiamen has been a popular destination for internal migration, and the number of young Southern Min speakers are on the decline. Therefore, the mix of lifelong Xiamen locals and those who were born elsewhere but moved to Xiamen prior to their early

teens achieved a good representation of the population.

4.2.4 Factor analysis on rating items

For experimental studies that involve evaluation tasks, it has always been a challenge to ensure that listeners interpret the rating items as intended. In addition, several items might be perceived as more similar to each other than to the other items. Therefore, it is common to use methods of dimension reduction to understand the underlying similarities between the scores of different rating items. To this end, in this study, I conducted factor analyses on both the rating items for the stimuli as well as the explicit language attitude questions.

Since I designed the rating items and language attitude questions with hypotheses regarding how different items or questions could be related to each other, I used the factor analysis as a confirmatory test and determined the appropriate number of factors a priori. Following the discussion in Section 4.2.2, I hypothesized that the 12 rating items could be reduced to five factors: status, solidarity, dynamism, femininity/*sajiao*, and northern orientation. Thus, I ran a factor analysis with the setting of five factors. The model accounts for 77% of the variance in the data and the p-value was 0.0568, indicating good model-fit. Table 4.10 shows the loadings for the five factors. Factor loading represents the extent to which each item contributes to a given factor. In other words, factor loadings help us interpret what underlying structure each factor captures.

The loadings for Factor 1 and Factor 2 are shown in Figure 4.5. For Factor 1, we can see loadings for three items related to the orientation towards Beijing and the North cluster in the lower right corner, away from the other items on the x-axis. The strongest loading for this factor comes from the item "will stay in Beijing after graduation" (0.89), followed closely by "can easily find a job in Beijing" (0.78) and "have many northern friends" (0.68). Given these loadings, I concluded that this factor represents the orientation towards Beijing and the north, and I will henceforth refer to it as BEIJING [7].

[7]The ALLCAPS indicates that the name is given *post hoc* based on my interpretation of the loadings.

Factor 2 appears to capture a sense of likability. Two items have the same loadings for this factor: "warm" (0.73) and "likable" (0.73), both of which were designed to examine the dimension of solidarity. Two other items that also had fairly high loadings for Factor 2 are "*sajiao*" (0.7) and "energetic" (0.67). Recall that the essence of *sajiao* is to appeal to others' affection via an infantilized feminine style. Therefore, it is reasonable that this particular style loads with the more general sense of being likable. While "energetic" was originally included to reflect the dimension of dynamism, it is not very difficult to see its connection to "warm", since the perception of a warm person often involves efforts of reaching out to others. This factor is called LIKABILITY.

Factors 3 and 4 are shown on Figure 4.6. For Factor 3, two items linked to status contributed the most: "educatedness" (0.83) and "smart" (0.73). Also, the college-specific form of status, "*xueba*", the academic overachiever, also loads with these two items. Therefore, I will refer to Factor 3 as EDUCATEDNESS, following the rating item that loads most strongly to this factor.

Factor 4 corresponds to what I intended as dimension in the design. The items that load fairly strongly to this factor are "talkative" (0.54) and "energetic" (0.41). Similar to the situation with Factor 3, "engages in many social activities" (0.38), which can be interpreted as the local way of being dynamic, also loads with these two broader items. This factor is thus named DYNAMISM.

Although the five-factor model in general presented a good fit of the dataset, the fifth factor is not very informative. Only one item *xueba* loads to this factor, and the loading is rather weak, especially considering that the same item shows higher loading for Factor 1 and Factor 3. In addition, this factor alone only explains 1% of the variance in the model. Therefore, it was dropped in the regression analysis.

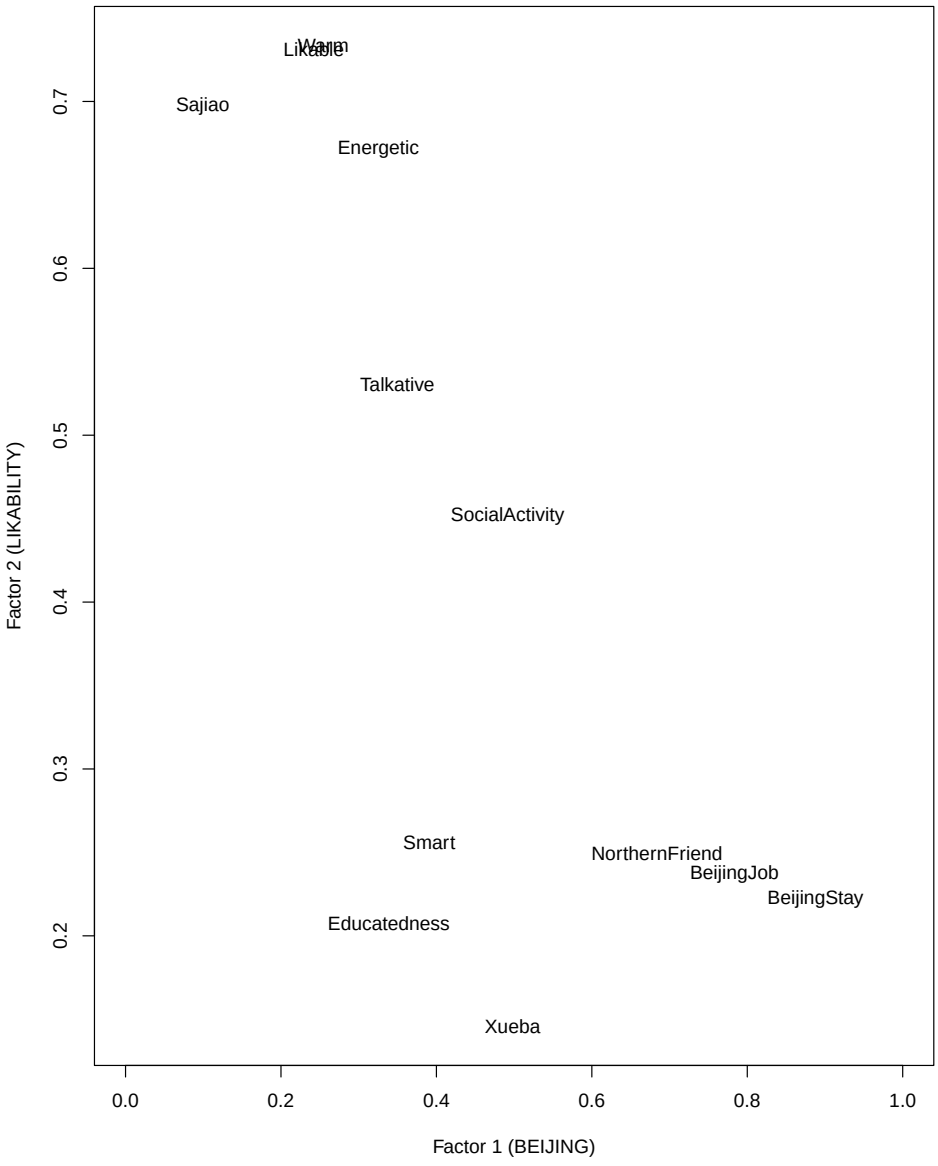


Figure 4.5: Rating items Factor 1 and Factor 2

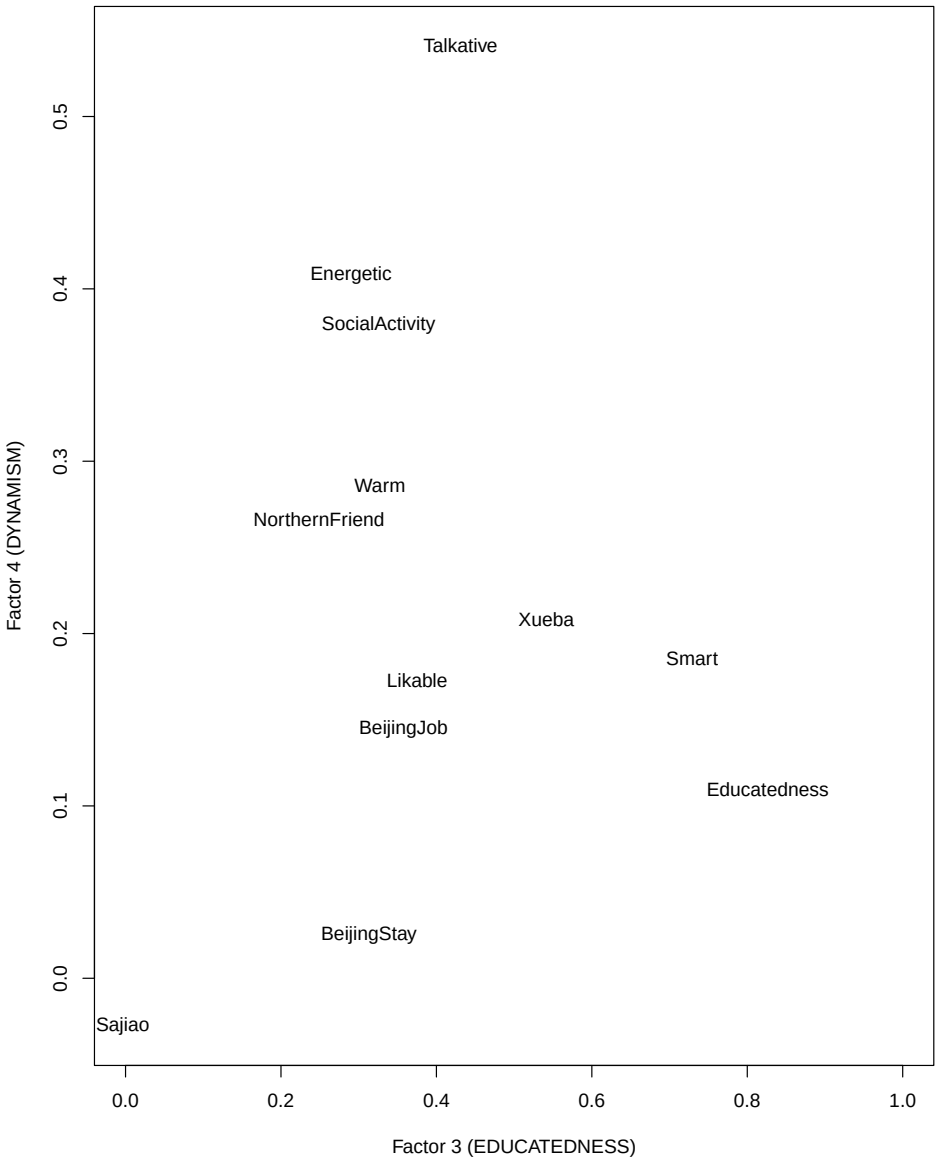


Figure 4.6: Rating items Factor 3 and Factor 4

Rating Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
NorthernFriend	0.68	0.25	0.25	0.27	
BeijingJob	0.78	0.24	0.36		
BeijingStay	0.89	0.22	0.31		
Warm	0.25	0.73	0.33	0.29	
Likable	0.24	0.73	0.38		
Energetic	0.33	0.67	0.29	0.41	
Sajiao		0.70			
Educatedness	0.34	0.21	0.83		
Smart	0.39	0.26	0.73		
Xueba	0.50		0.54	0.21	0.27
Talkative	0.35	0.53	0.43	0.54	
SocialActivity	0.49	0.45	0.33	0.38	

Table 4.10: Factor loadings for rating items

4.2.5 Factor analysis for language attitude questions

In like manner, I used the factor analysis as a confirmatory test for the language attitude questions. I hypothesized that the 11 questions could be reduced to five factors: Status for Northern Mandarin, status for Xiamen Mandarin and the Taiwanese accent, pleasantness for Northern Mandarin, pleasantness for Xiamen Mandarin and the Taiwanese accent, and future plan (whether to return to Xiamen). I ran an analysis with a five-factor structure. The resulting model accounts for 61% of variance in the data and has a p-value of 0.482, indicating good model fit. Table 4.11 shows the loadings for the five factors.

The loading for Factor 1 and Factor 2 are shown in Figure 4.7. Factor 1 appears to capture the aspect of pleasantness associated with Xiamen Mandarin and the Taiwanese accent. The statement that loads the strongest is "I think the Taiwanese accent sounds pleasant" (0.87), followed by the similar statement on Xiamen Mandarin (0.71). Also contributing substantially to this factor is the statement "I feel happy when others say that I have a Taiwanese accent" (0.69). Given the consistency across these three statements, I will

refer to this factor as XIAMEN-PLEASANT. Factor 2, in contrast, can be interpreted as the social status of the two varieties, as evidenced by the fact that the only two statements that load strongly to this factor are both about this aspect. Therefore, I named this factor XIAMEN-STATUS.

Figure 4.8 shows the loadings for Factors 3 and 4. Factor 3 likely represents the evaluation of Northern Mandarin. The strongest contribution here is the pleasantness of Northern Mandarin (0.65), followed by the social status of the same variety (0.49). Another factor that loads strongly is the statement "I think it is important to use standard pronunciation" (0.47). Since Northern Mandarin is the base for standard pronunciation, it is unsurprising that the evaluation of such standard language ideology correlates with the evaluation for Northern Mandarin. The statement "When I'm in Beijing, I don't want to change my accent" is the only contributor that loads negatively to this factor (-0.54), indicating that the scores for this statement are negatively related to the other statements mentioned above. Since the question is specifically about one's linguistic choices in Beijing, it is reasonable to assume if a participant was to change their accent, it would be towards Northern Mandarin. Hence, those who refuse to change their accent likely find Northern Mandarin less favorable. Since all statements load rather strongly for this factor and conjointly reflect the participants' evaluation of Northern Mandarin, I will henceforth refer to this factor as NORTH.

The interpretation of Factor 4 is rather straightforward. The only statement that loads strongly is about whether the participant would consider returning to Xiamen. This pattern is expected, since it is the only statement that is not directly related to language. This factor will be called XIAMEN-RETURN.

Similar to the factor analysis regarding the rating items, the fifth factor for the language attitude factor analysis also contributes little to dimension reduction. The loadings for the two statements are rather low, and the factor only accounts for 2% of the variance in the data. Thus, I excluded this factor in the regression analysis.

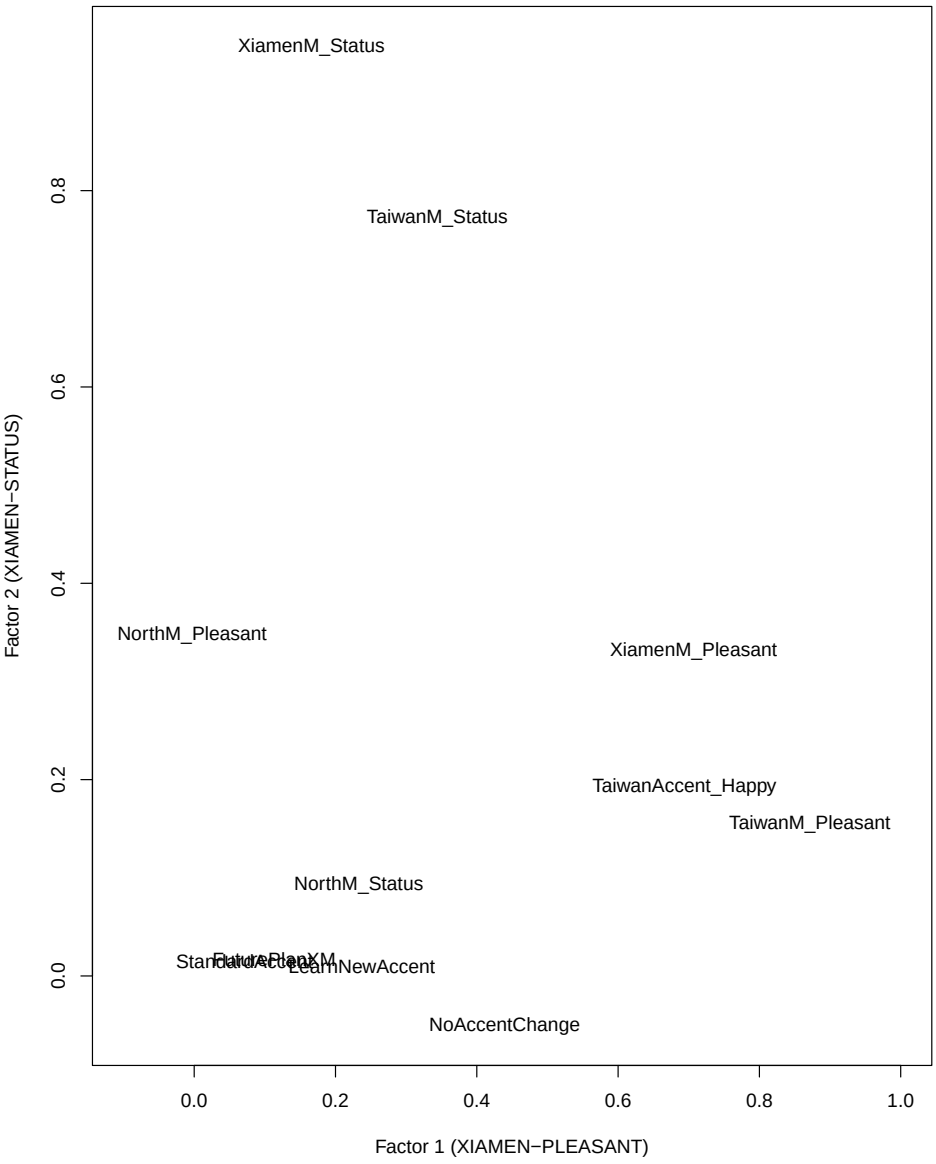


Figure 4.7: Language attitude questions Factor 1 and Factor 2

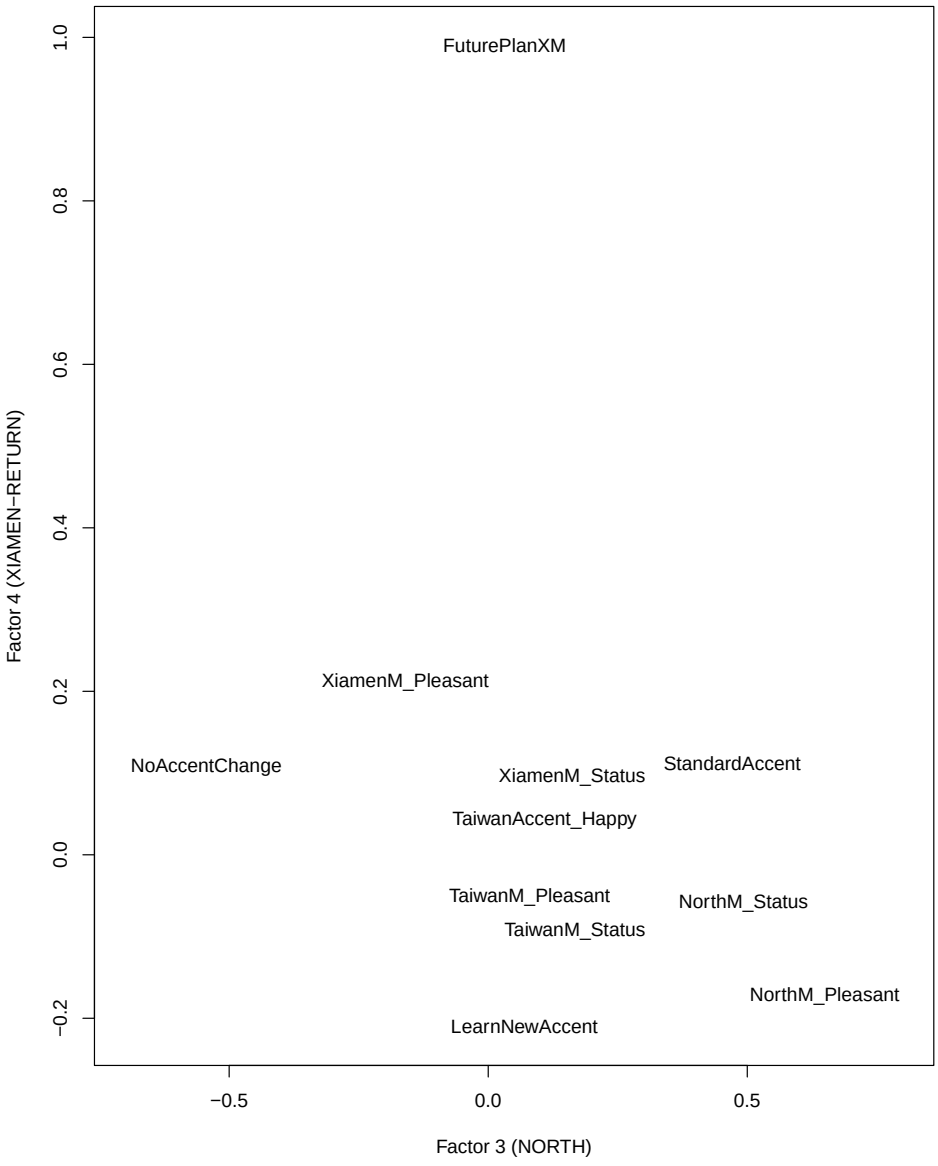


Figure 4.8: Language attitude questions Factor 3 and Factor 4

Language Attitude	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
XiamenPleasant	0.71	0.33		0.21	0.23
TaiwanPleasant	0.87				
TaiwanAccentHappy	0.69				
XiamenStatus		0.95			
TaiwanStatus	0.34	0.77			
NorthPleasant		0.35	0.65		
NoAccentChange	0.44		-0.54		
FuturePlanXM				0.99	
NorthStatus	0.23		0.49		0.28
LearnNewAccent	0.24			-0.21	
StandardAccent			0.47		

Table 4.11: Factor loadings for language attitude questions

In sum, the factor analysis has reduced the responses to the rating task into four dimensions, namely, BEIJING, LIKABILITY, EDUCATEDNESS, and DYNAMISM. In the statistical analysis, a regression model was built for each dimension. The dependent variables were the scores generated by the factor analysis. The independent variables included gender, school year, the order in which a passage appeared, as well as the four factors revealed by the factor analysis on the language attitude questions. By the same token, the scores from the factor analysis for XIAMEN-PLEASANT, XIAMEN-STATUS, NORTH, and XIAMEN-RETURN were the values for the four variables.

In brief, in this chapter, I motivated the methods for data collection and data processing for the production and social perception studies. In the next chapter, I will present the results of the regression analysis for the production tasks.

Chapter 5

Production

In this chapter, I discuss the results of the production study which examines the stylistic use of D2 features by relocated Xiamen college students in Beijing. Specifically, I will show how the regional background of the interlocutor (Xiamen or Northern) as well as place-related topic affect relocated Xiamen speakers' use of the three linguistic variables. For each variable, four mixed-effects regression models were built. The first two models were built to compare the production of the focal Xiamen speakers and that of their Northern counterparts, in order to establish the baseline for interpreting the direction of the stylistic shifts. Since the conversation data and the two kinds of read speech data (i.e. passage and wordlist) were produced by different groups Northern speakers, one model was built examine the production data in conversation, and another was built to examine the read speech data. Two other models were built for the production data from only the focal Xiamen participants to examine their stylistic variation, one for the effect of interlocutor regional background, and the other for the effect of placed-based topic. These four models will be referred to as general conversation model, general read speech model, audience model, and topic model henceforth.

The mixed-effects models all included maximal random effects structure which still converged for the model (Barr, Levy, Scheepers, & Tily, 2013) using the lme4 (Bates, Mächler, Bolker, & Walker, 2015) package in R (R Core Team, 2018). Statistical significance of the independent variables were determined using the lmerTest (Kuznetsova, Brockhoff, & Christensen, 2017) package. Treatment contrasts were used for all fixed effects. For multi-level factors, the significance of the significance of the pairwise comparisons was examined

by relevelling the factors. The random effect structure will be laid out in each section.

As shown in the first column of Table 5.1, three types of factors were examined in the general conversation model: speaker place of origin (Northern or Xiamen), gender (female or male) as well as the relevant linguistic factors for a given linguistic variable. In the general read speech model, as shown in the second column of Table 5.1, the same three types of factors were included, as well as the factor of style (passage or wordlist). The interaction between place of origin and style was included to examine whether the difference between Northern and Xiamen Mandarin speakers was consistent across different linguistic styles. According to the Labovian "Attention to speech" paradigm, wordlist is a more formal speech style compared to reading passage, and thus draws more attention to speech. Since Northern Mandarin resembles more closely to *Putonghua*, the national standard, compared to Xiamen Mandarin, I hypothesized that the degree of Northern Mandarin use would be higher in the wordlist compared to the reading passage. The interaction between other independent factors were not tested due to the lack of evidence for concrete predictions from previous literature.

The last two columns in Table 5.1 show the independent variables tested in the audience and topic model, respectively. In the audience model, the factors included audience (Xiamen or Northern), style (wordlist or conversation), Beijing orientation score (-1, 0, 1), school year (sophomore or junior and senior), gender (female or male), order (first or second conversation/reading session), and the relevant linguistic variables. Additionally, the interaction between audience and Beijing orientation was included to examine how the focal Xiamen participants' explicit place-based identity, represented in the form of Beijing orientation score, affected their production when different "place" was foregrounded by the means of audience. Finally, the interaction between audience and style was investigated to examine if the effect of audience differed across speech styles associated with different levels of formality.

In the topic model, the effects of topic (Beijing or Xiamen), Beijing orientation (-1,

General - conversation	General - read speech	Audience	Topic
• place of origin • gender • linguistic factor(s)	• place of origin • style • gender • linguistic factor(s) • place of origin * style	• audience • Beijing orientation • style • school year • gender • linguistic factor(s) • order • audience * Beijing orientation • audience * style	• topic • Beijing orientation • school year • gender • linguistic factor(s) • topic * Beijing orientation

Table 5.1: Summary of factors tested in the models for production data

0, 1), school year (sophomore or junior and senior), gender (female or male) and relevant linguistic factors were tested. Similar to the case of the audience model, the interaction of topic and Beijing orientation was examined in order to understand how the explicit place-based identity affected production when "place" was foregrounded by the means of topic.

5.1 /s/-/ʂ/ contrast

For the /s/-/ʂ/ contrast, separate models were built to examine the sibilant realization of /s/ and /ʂ/ respectively. The use of the lenited variant [ɹ] was investigated separately. In the mixed-effects linear models for sibilant realization, the dependent variable was the median spectral peak frequency in ERB. Aside from the social factors discussed above, the linguistic factor of following vowel (/i/, /a/, or /u/) was included as an independent variable.

5.1.1 Results for /s/

Establishing the baseline

A total of 4612 tokens of /s/ were examined in the general conversation model, and 4207 /s/ tokens were included in the general read speech model. The random effect structure for the general conversation model included by speaker random intercept, by word random intercept, following vowel by speaker random slope, place of origin by word random slope and gender by word random slope. For the general read speech model, the random effect structure included by speaker random intercept, by word random intercept, following vowel by speaker random slope, place of origin by word random slope, style by word random slope, gender by word random slope, and the interaction of place of origin and style by word random slope.

Table 5.2 shows the significant effects in the general conversation model for /s/, and Table 5.3 shows the significant effects in the general read speech model. Recall that measure

	Estimate	Std. Error	t-value
(intercept)	30.8538	0.3766	81.935
place of origin=*Northern*	3.1606	0.4354	7.259***
gender=*male*	-2.1620	0.4433	-4.877***
following vowel=*/a/*	1.7720	0.3135	5.652***
following vowel=*/i/*	2.1417	0.2839	7.543***

Symbols following the t-values indicate the associated p-value: *** $p < 0.001$

Table 5.2: Significant effects in the general conversation model for /s/

of peak frequency correlates with the place of articulation for sibilants in a way that higher peak frequency indicates more front constriction. Since Northern Mandarin should have fronter production of the denti-alveolar /s/, we would expect higher peak frequency for the Northern controls. This prediction was only confirmed in the conversation data, as indicated by the significant effect of place of origin in the general conversation model in the expected direction. In the general read speech model, however, place of origin was not a significant effect. Rather, there was a significant interaction between place of origin and style such that in the reading passage, Xiamen speakers had fronter production than Northern speakers, whereas in the wordlist, the Northern speakers had fronter production than their Xiamen counterparts, as shown in Figure 5.1. In order to examine the significance of this pattern, I subsetted the data into two groups by style (reading passage, worlist), and tested the effect of place of origin in models that had similar structure as the general read speech model except for the factors involving style. In both models, place of origin turned out insignificant.

[1]The effect of place of origin is not significant; it is included for the interpretation of the interaction between place of origin and style.

	Estimate	Std. Error	t-value
(intercept)	30.29852	0.39750	76.222
place of origin=*Northern*	0.04915	0.42821	0.115
style=*passage*	0.78907	0.23500	3.358**
gender=*male*	-1.59836	0.38346	-4.168***
following vowel=*/a/*	3.39560	0.30414	11.165***
following vowel=*/i/*	3.33984	0.32380	10.314***
place of origin=*Northern*: style=*reading*	-0.92191	0.22717	-4.058***

Symbols following the t-values indicate the associated p-value: *** $p < 0.001$, ** $p < 0.01$

Table 5.3: Significant effects in the general read speech model for /s/ [1]

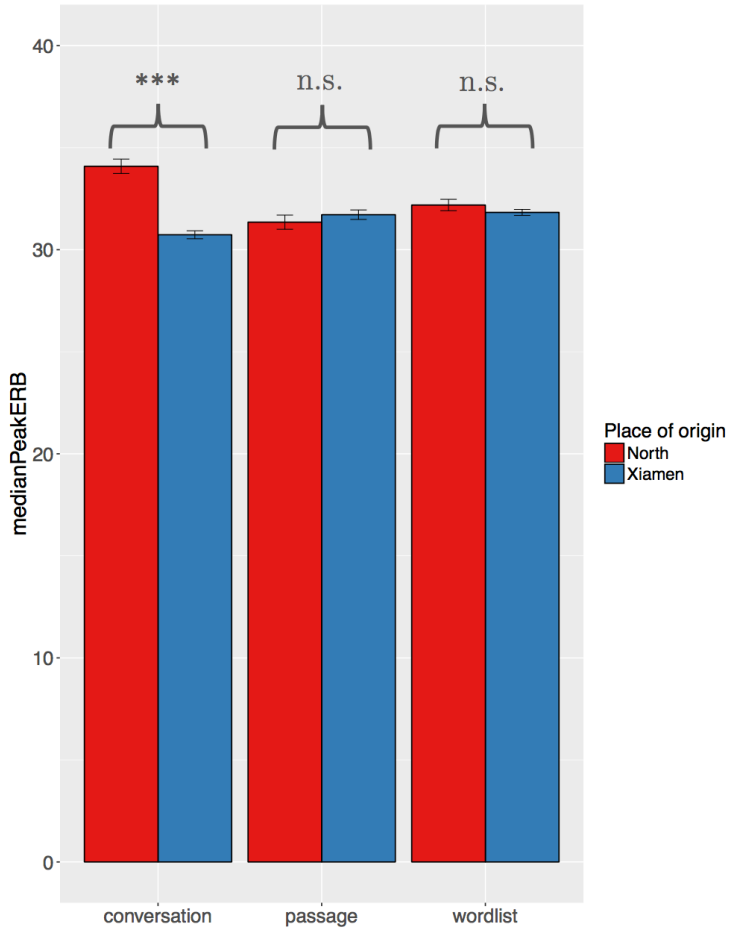
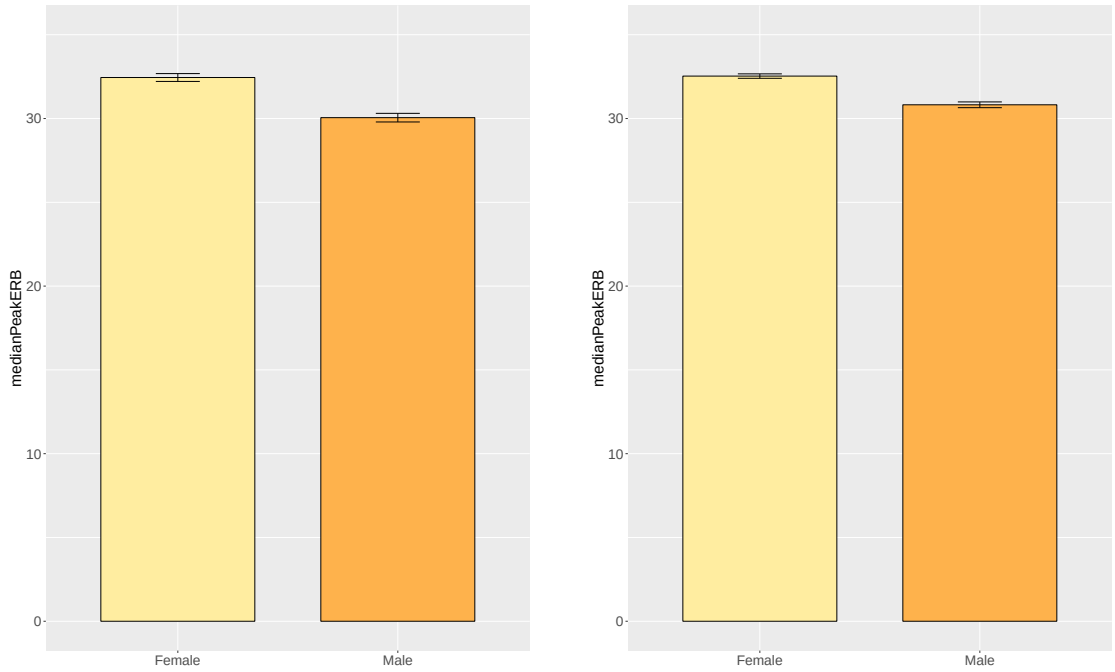


Figure 5.1: Median peak ERB by style and place of origin for /s/ for Xiamen and Northern speakers. Error bars indicate 95% confidence intervals. The asterisks indicate significance: *** $p < 0.001$; n.s. stands for not significant.



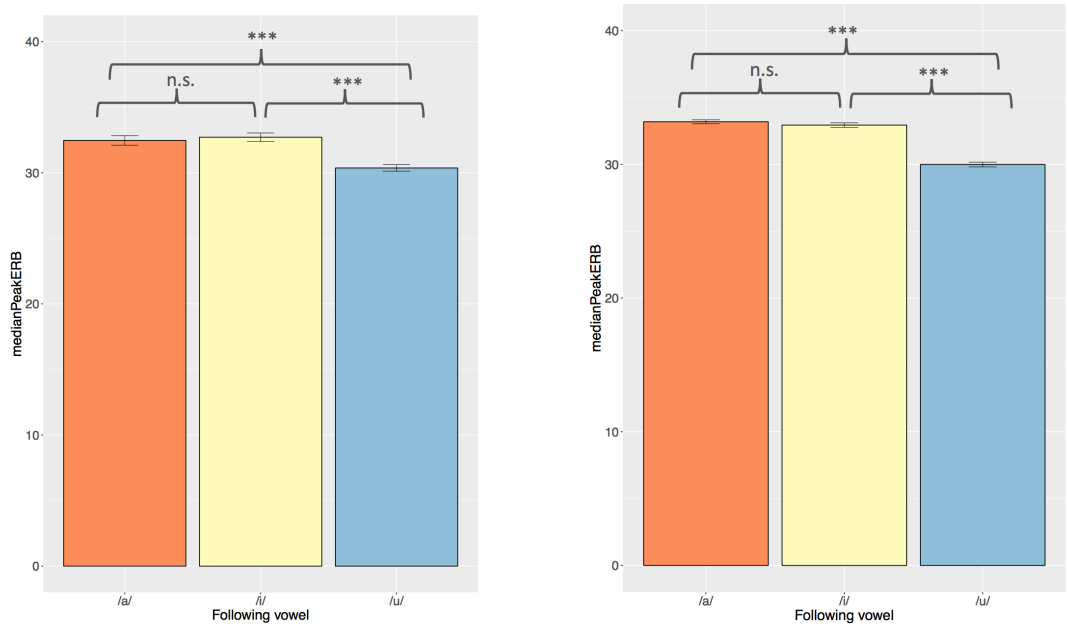
(a) Mean peak ERB by gender for conversation for /s/

(b) Mean peak ERB by gender for read speech for /s/

Figure 5.2: Mean peak ERB by gender for /s/ for Northern and Xiamen speakers. Error bars indicate 95% confidence intervals. The asterisks indicate significance: *** $p < 0.001$; n.s. stands for not significant.

Both general models revealed similar significant effect of gender: female speakers tended to have higher peak frequency than males, as shown in Figure 5.2.

Finally, the effect of following vowel was also similar in both models. The /s/ production was significantly fronter when followed by /i/ or /a/ than when followed by /u/, but the difference between the following vowels /i/ and /a/ was not significant. This pattern of lower spectral frequency when followed by /u/ corroborates previous research on Beijing Mandarin and Taiwan Mandarin (Chang & Shih, 2015; Jeng, 2006).



(a) Mean peak ERB by following vowel for conversation for /s/

(b) Mean peak ERB by following vowel for read speech for /s/

Figure 5.3: Mean peak ERB by following vowel for /s/ for Northern and Xiamen speakers. Error bars indicate 95% confidence intervals.

Audience regional background

In the audience model, in which the conversation and wordlist data was included, the maximal random effect structure that still converged included by speaker random intercept, by word random intercept, audience by speaker random slope, style by speaker random slope, Beijing impression by word random slope, and gender by word random slope. Table 5.4 shows the factors that tested significant in the audience model for /s/.

The significant effect of audience is rather intriguing, as it turned out to pattern in an unexpected direction. Since the Northern control speakers did produce more front /s/ in the conversation data as suggested in the literature (F. Li, 2008), we would expect the mobile Xiamen speakers to produce more fronted /s/ when interacting with their Northern friends. However, the direction of the effect was quite the reverse in our data: they had lower median peak frequency (see Figure 5.4), and thus backer production in the presence

	Estimate	Std. Error	t-value
(intercept)	30.5973	0.4878	62.724
audience=*Northern*	-0.5302	0.2088	-2.540*
style=*conversation*	-0.5822	0.2337	-2.491*
gender=*male*	-1.6938	0.4437	-3.817***
following vowel=*/a/*	3.0144	0.2174	13.868***
following vowel=*/i/*	2.8479	0.2045	13.928***

Symbols following the t-values indicate the associated p-value: *** $p < 0.001$, * $p < 0.05$

Table 5.4: Significant effects in the audience model for /s/.

of a Northern audience compared to a Xiamen audience.

We can posit two potential explanations for this effect. One would be that the relocated Xiamen speakers diverged from their Northern friends, possibly as a way to distance themselves socially (Bourhis & Giles, 1977). Another possibility is that this seemingly divergent speech pattern actually resulted from the hypercorrection of the denti-alveolar /s/ to the retroflex /ʂ/, which is the more prestigious form of the two variants in the merger of /s/ and /ʂ/ (Chung, 2006). In this case, it would be more appropriate to describe the observed pattern as "subjective convergence" (Thakerar, Giles, & Cheshire, 1982), where speakers shifted their speech to include features that they believed to be, but not actually were, characteristics of their interlocutors. I will entertain these two possibilities in details in Section 7.2, and discuss why the latter is more plausible for the present study.

The significant effects of gender and following vowel were the same as the two general models. Female speakers had fronter production than male speakers, similar to the patterns in Figure 5.2. When followed by /u/, the /s/ production was significantly lower than when followed by /i/ or /a/, but no significant difference was found between the production followed by /i/ or /a/, similar to the patterns in Figure 5.3. In terms of style, the relocated Xiamen speakers had significantly more fronted production in the wordlist than in the conversation, as is shown in Figure 5.1. This is an expected effect; since the fronter production is more standard-like, we would expect to find fronter production in the more formal style

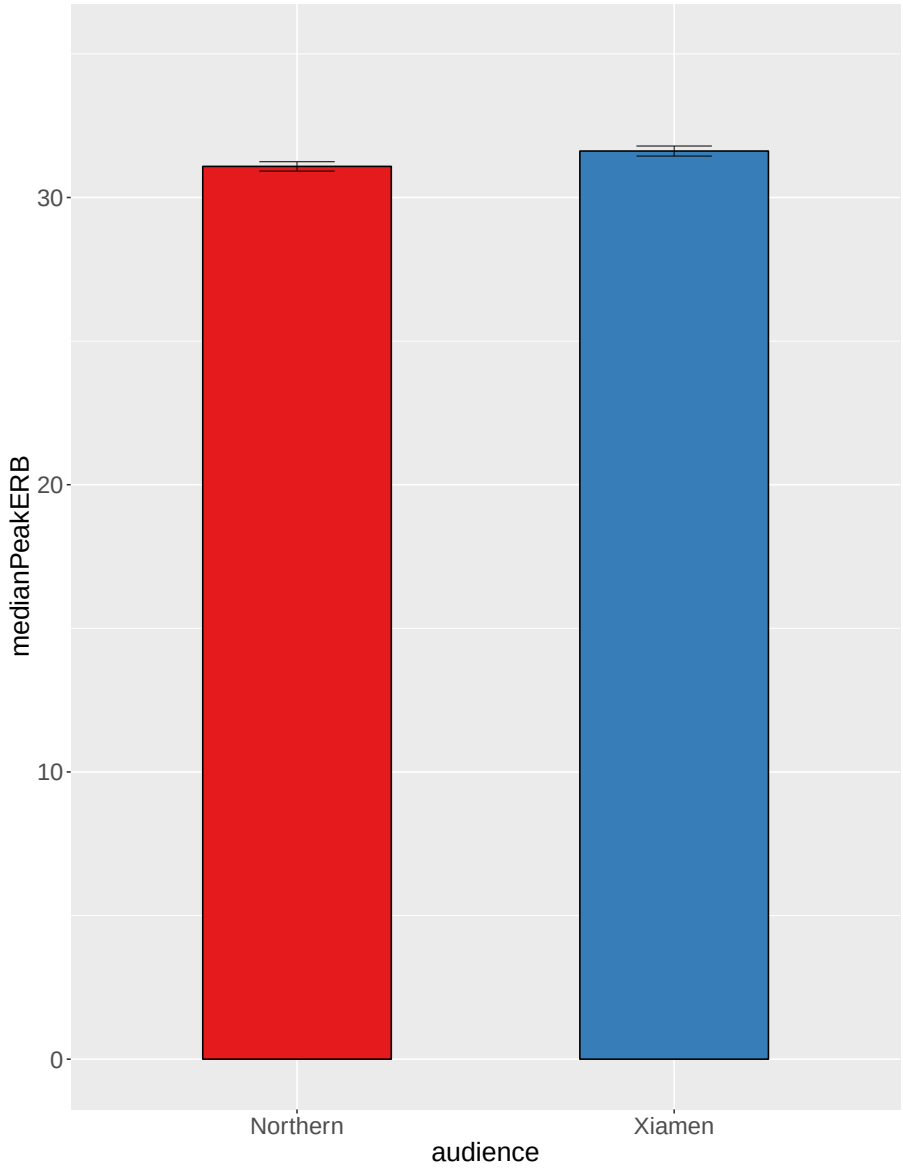


Figure 5.4: Median Peak ERB by audience for /s/. Error bars indicate 95% confidence intervals.

	Estimate	Std. Error	t-value
(intercept)	30.9443	0.6734	45.953
gender=*male*	-1.6587	0.5914	-2.805**
following vowel=*/a/*	3.1414	0.5464	5.749***
following vowel=*/i/*	2.9414	0.5552	5.298***

Symbols following the t-values indicate the associated p-value: *** $p < 0.001$, ** $p < 0.01$

Table 5.5: Significant effects in the topic model for /s/.

of wordlist.

Topic

In this model, the random effect structure included by speaker random intercept, by word random intercept, topic by speaker random slope, following vowel by speaker random slope, gender by word random slope, school year by word random slope, and Beijing orientation by word random slope. Only two factors tested significant in this model: gender and following vowel (See Table 5.1.2. The direction of both effects were the same as the general models and the audience model.

5.1.2 Results for /ʂ/

Establishing the baseline

A total of 2519 tokens of /ʂ/ were analyzed in the general model conversation, and 4065 /ʂ/ tokens were analyzed in the conversation read speech model. For the general conversation model, the random effect included by speaker random intercept, by word random intercept, following vowel by speaker random slope, place of origin by word random slope, and gender by word random slope. For the general read speech model, the maximal random effect structure that still converged included by speaker random intercept, by word random intercept, region by word random slope, style by word random slope, gender by word random slope, and the interaction between region and style by word random slope.

	Estimate	Std. Error	t-value
(intercept)	26.9491	0.4183	64.424
place of origin=*Northern*	-1.5124	0.5357	-2.823**
following vowel=*/a/*	1.1790	0.2893	4.076***
following vowel=*/i/*	0.6542	0.2586	2.530*

Symbols following the t-values indicate the associated p-value: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Table 5.6: Significant effects in the general conversation model for /ʂ/

	Estimate	Std. Error	t-value
(intercept)	26.8994	0.3493	77.004
place of origin=*Northern*	-1.9243	0.5254	-3.663***
style=*passage*	0.5854	0.1930	3.034 **
following vowel=*/a/*	0.4974	0.1337	-2.704*
following vowel=*/i/*	-0.3616	0.1337	-2.704**
place of origin=*Northern*: style=*passage*	-0.7069	0.2249	-3.143**

Symbols following the t-values indicate the associated p-value: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Table 5.7: Significant effects in the general read speech model for /ʂ/

Table 5.6 and Table 5.7 show the significant effects for the general conversation model and the general read speech model, respectively. Of the most relevance to the present study is the factor of place of origin, and it showed significant effects in both models in the expected direction: Northern Mandarin speakers' production had significantly lower peak frequency, indicating backer /ʂ/ production, than the Xiamen speakers (See Figure 5.5. There was also a significant interaction between style and place of origin for the general read speech model. Further testing on the subsetted data using mixed effects models with similar factor structure except for those involving style showed that the effect of style was only significant for the relocated Xiamen speakers, but not for the Northern speakers.

For following vowel, the two models show significant effects in different directions. For both data sets, /ʂ/ production when followed by /a/ had higher peak frequency, and thus fronter production compared to when followed by the other two vowels. For the conversation data, /ʂ/ production followed by /i/ was significantly fronter than by /u/, whereas for the read speech data, the production was fronter when followed by /u/ than by /i/.

Audience regional background

In the audience model for /ʂ/, the random effects were by speaker random intercept, by word random intercept, audience by speaker random slope, style by speaker random slope, following vowel by speaker random slope, and Beijing orientation by word random slope. The significant effects for this model are listed in Table 5.8. Of the most relevance to the current study is the factor of audience regional background, which, in contrast to the case with /s/, exhibited an effect in the expected direction; the mobile Xiamen speakers had lower peak frequency, and thus backer and more Northern Mandarin-like pattern, in the Northern friend condition compared to the Xiamen friend condition.

There was also a significant interaction between style and audience, as illustrated in Figure 5.7. Further testing with subsetted data using similar modeling strategies revealed

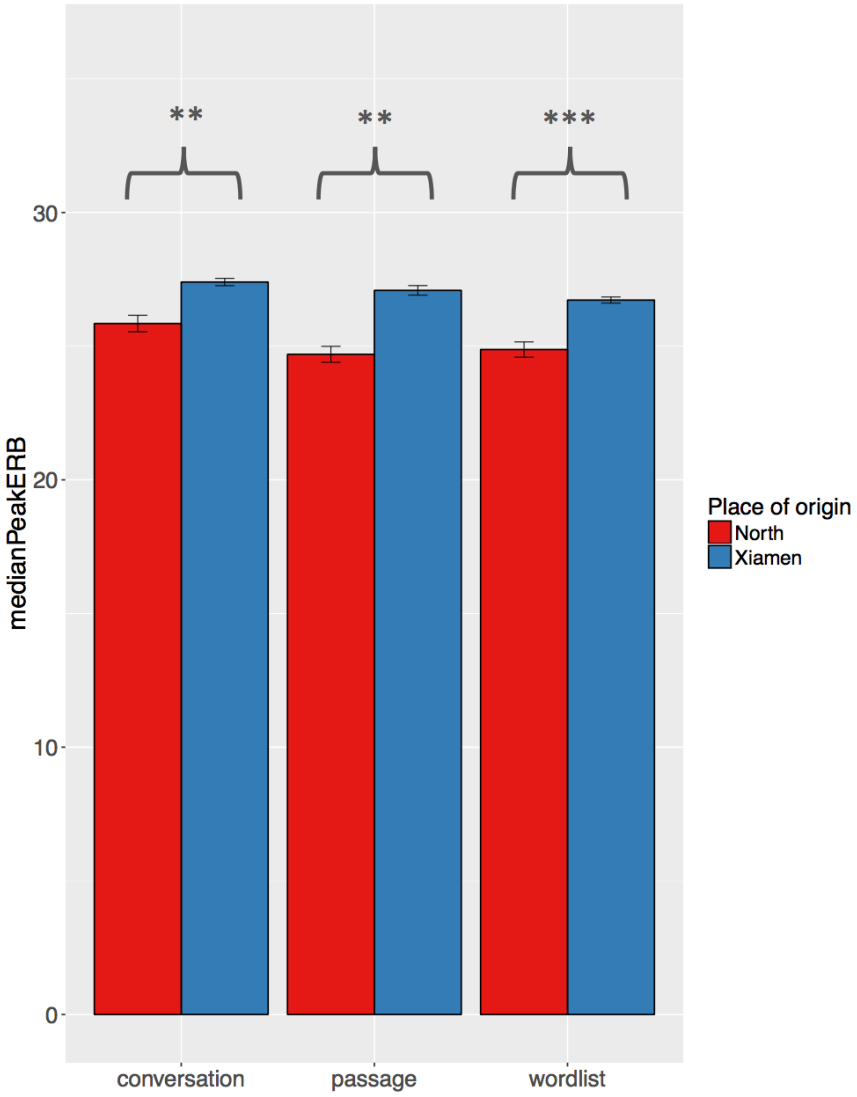
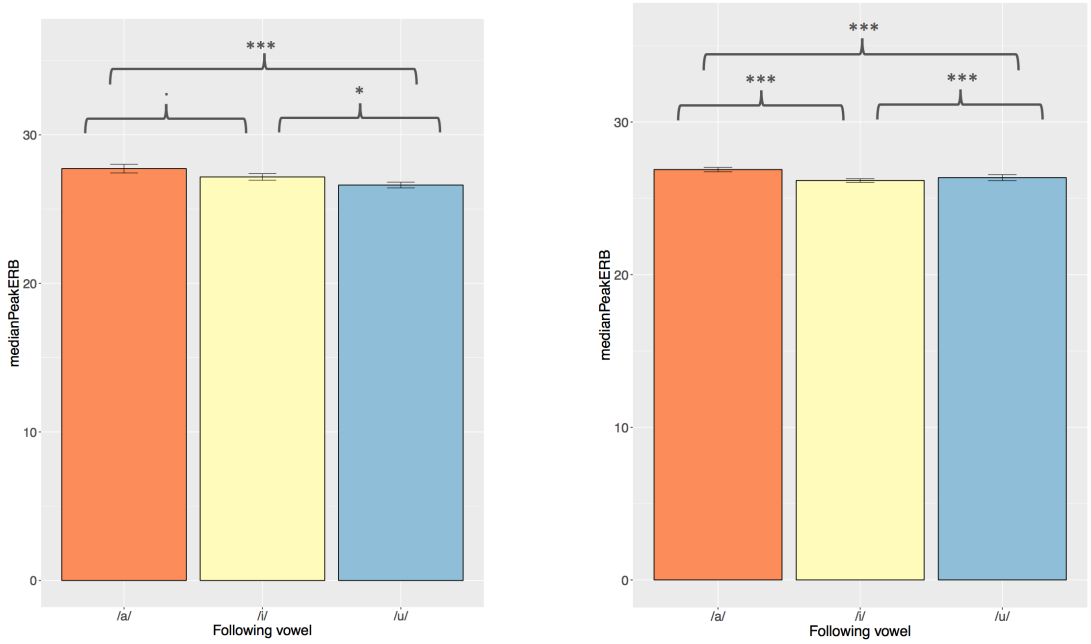


Figure 5.5: Median Peak ERB by style by place of origin for /ʂ/ for Northern and Xiamen speakers. Error bars indicate 95% confidence intervals. The asterisks indicate significance: *** $p < 0.001$, ** $p < 0.01$



(a) Mean peak ERB by following vowel for conversation for /ʂ/

(b) Mean peak ERB by following vowel for read speech for /ʂ/

Figure 5.6: Mean peak ERB by following vowel for /ʂ/ for Northern and Xiamen speakers. Error bars indicate 95% confidence intervals. The asterisks indicate significance: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, . $p < 0.1$.

that the audience effect was only significant for the conversation data, although the effect was in the same direction across the two styles.

The effect of Beijing orientation score, which represents relocated Xiamen speakers' impression of Beijing, was also a significant predictor. As illustrated in Figure 5.8, speakers who had higher Beijing orientation scores, and thus more positive impression of Beijing, had lower peak frequency. Furthermore, this factor also shows a significant interaction with audience: the effect of audience was stronger for speakers with negative or neutral impressions of Beijing. An alternative way to interpret this interaction is that the effect of Beijing orientation was stronger in the Xiamen condition compared to the Northern condition, as indicated by the steeper slope of the regression line for the Xiamen condition. In other words, the interaction shows that speakers who were less oriented to Beijing were less

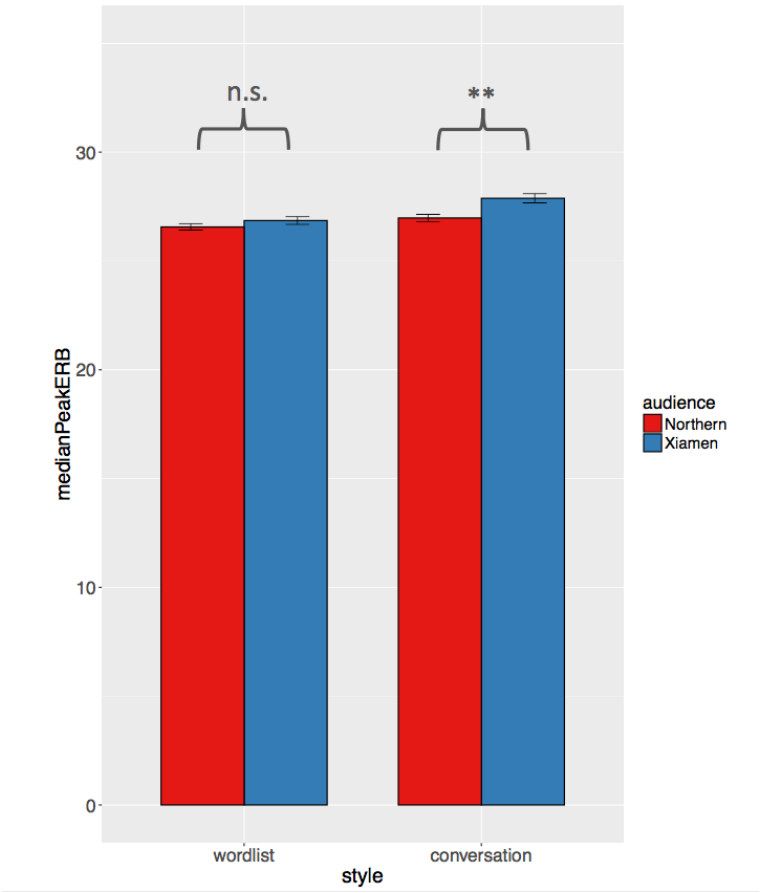


Figure 5.7: Median Peak ERB by style by audience for /ʂ/. Error bars indicate 95% confident intervals. The asterisks indicate significance: *** $p < 0.001$; n.s. stands for not significant.

	Estimate	Std. Error	t-value
(intercept)	27.6263	0.4282	64.524
audience=*Northern*	-0.4693	0.2027	-2.316*
style=*conversation*	1.3297	0.3725	3.569***
Beijing orientation	-1.0542	0.3119	-3.380**
following vowel=*/u/*	-1.0087	0.3286	-3.069**
following vowel=*/i/*	-0.6681	0.1823	-3.664***
style=*conversation*: audience=*Northern*	-0.5797	0.1368	-4.238***
audience=*Northern*: Beijing orientation	0.5517	0.2130	2.590*

Symbols following the t-values indicate the associated p-value: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Table 5.8: Significant effects in the audience model for /ʂ/

likely to use more Northern Mandarin-like production with their Xiamen friends compared to those who had more positive impressions of Beijing.

Lastly, there was also an effect of following vowel as indicated in Table 5.8, and all the pairwise comparisons were significant.

Topic

In this model, the maximal random structure that still converged included were by speaker random intercept, by word random intercept, topic by speaker random slope, and Beijing orientation by word random slope. The only significant predictor in the model was Beijing orientation ($\chi^2(1, N = 932) = 4.659, p = 0.03089$). The effect was in an expected direction: speakers who scored higher for Beijing orientation were more likely to produce tokens with lower peak frequency, and were thus backer and more Northern Mandarin-like. The effect of topic also approached significance ($\chi^2(1, N = 932) = 3.8158, p = 0.05077$) in an expected direction: speakers had lower peak frequency in the Beijing passage compared to the Xiamen passage.

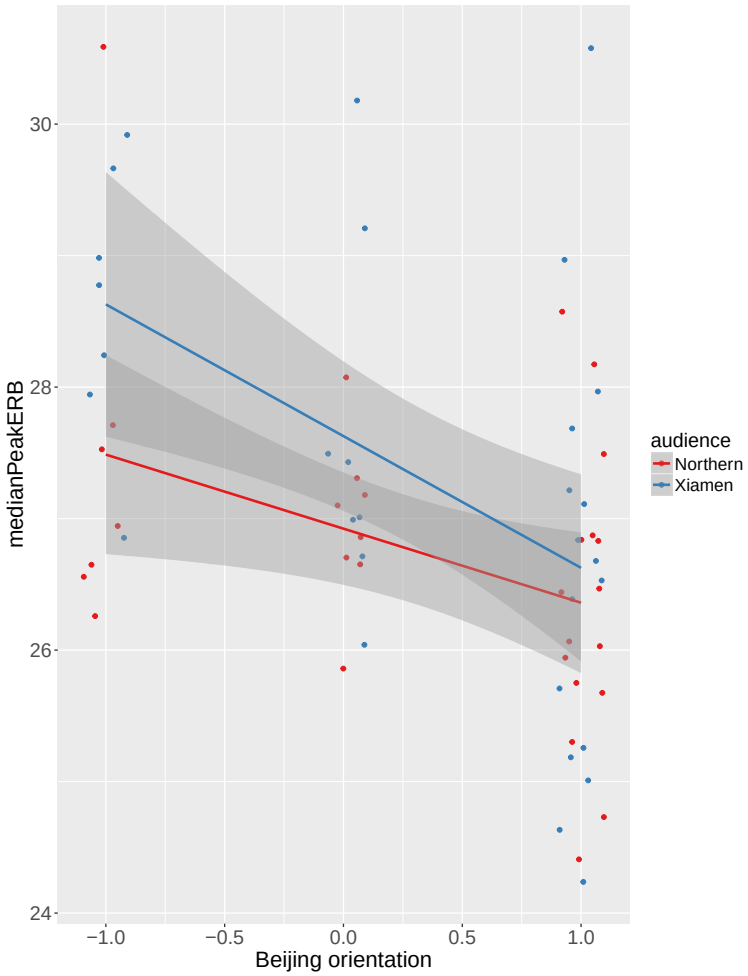


Figure 5.8: Median Peak ERB by Beijing orientation by audience for /ʂ/. Error bars indicate 95% confident intervals.

5.1.3 Results for retroflex approximant [ɹ]

In Northern Mandarin, retroflex sibilants [tʂ, tʂʰ, ʂ] in non-initial syllable positions can also be realized as the retroflex approximant [ɹ], especially in the context of casual speech (P. Chen, 1999; Pankhurst, 2012; Q. Zhang, 2005). No lenited [ɹ] was found in the wordlist or reading passage data. Therefore, the lenited variant was only coded for the conversation data. Altogether 1839 tokens of [ʂ] examined, only 73 were realized as [ɹ]. The majority of the [ɹ] realization was also contributed by the same two female speakers, Julie (N=18) and Susan (N=28). Given this highly skewed distribution, no statistical testing was carried out.

5.1.4 Summary for /s/-/ʂ/ contrast

To begin with, the contrast between the Northern controls and the mobile Xiamen speakers mostly corroborated the documented differences between the two varieties (Y. Chen, 1987; Y.-H. Lin, 2007). The Northern speakers had more front production for /s/ in the conversation data, and more back production for /ʂ/ compared to their Xiamen peers across all speech styles.

Both /s/ and /ʂ/ showed significant effect for audience, although the direction of the effect differed. For /ʂ/, we see that the Xiamen speakers had more Northern Mandarin-like production in the presence of their Northern friends as opposed to their Xiamen friends. For /s/, however, there was a seemingly divergence effect such that the focal Xiamen speakers actually produced backer production, i.e. the less Northern Mandarin-like /s/, when interacting with their Northern friends. This unexpected finding will be discussed in details in Section 7.2. For /ʂ/, the attitudinal factor of Beijing orientation showed an expected effect, and it also interacted with the audience effect as well. Specifically, the audience effect was the strongest for speakers who oriented negatively to the life in Beijing, and the effect was driven mostly by their more Xiamen Mandarin-like production in presence of Xiamen friends. No significant effect for topic was found.

The lenited variant [ɹ], which is a vernacular Northern Mandarin feature that is not part of codified or practiced *Putonghua*, was rarely used by the mobile Xiamen speakers.

5.2 Neutral tone

In the mixed-effects logistic models for neutral tone, the dependent variable was whether the word was realized with a full tone or neutral tone. In all models, the linguistic factors were the lexical condition (*Putonghua* vs. Northern Mandarin-exclusive) and morphological type (grammatical vs. irregular). Although in both the wordlist and conversation, neutral tone words of the reduplicative morphological type were also produced, these tokens were excluded due the low number of tokens (N=366) compared to the other two types (irregular, N = 5349; grammatical, N = 3003) [2], which could skew the results of the statistical analysis.

5.2.1 Results for neutral tone

Establishing the baseline

A total of 2422 disyllabic words were analyzed in the general conversation model, and 5930 words were included in the general read speech model. For the general conversation model, the maximal random effect structure that still converged included by word random intercept, by speaker random intercept and place of origin by word random slope. For the read speech model, the random effect structure that converged included only by speaker random intercept.

Table 5.9 and Table 5.10 list the significant effects for the general conversation and general read speech models respectively. As expected, we see a significant effect for place of origin. A comparison between Figure 5.9a and 5.10b shows clearly that Northern speakers produced a much greater proportion of the target words with a neutral tone compared to Xiamen speakers.

[2]Since reduplication only applies to a restricted semantic and pragmatic domain in Mandarin, this distribution reflects the general pattern of the language.

	Estimate	Std. Error	z-value
(intercept)	-0.5757	0.2998	-1.920
place of origin=*Northern*	3.3425	0.3301	10.125***
lexical condition=*North Mandarin*	-2.2184	0.3326	-6.670***
gender=*male*	-0.5975	0.2564	-2.331*
morphological type=*irregular*	-1.5112	0.3233	-4.674***

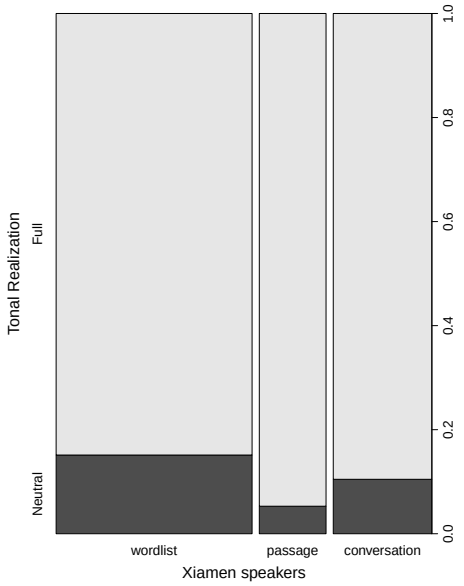
Symbols following the z-values indicate the associated p-value: *** $p < 0.001$, * $p < 0.05$

Table 5.9: Significant effects in the general conversation model for neutral tone.

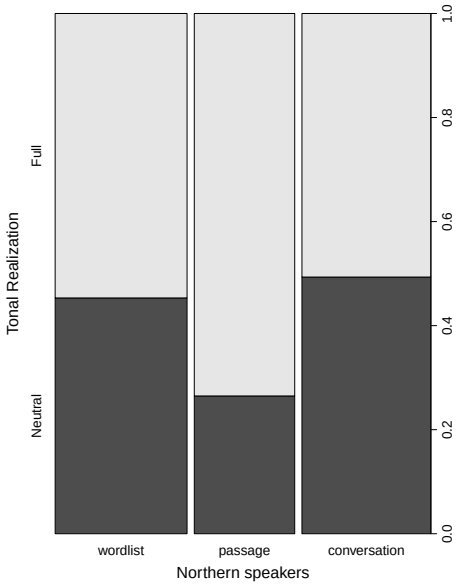
	Estimate	Std. Error	z-value
(intercept)	-1.49810	0.22071	-6.788
place of origin=*Northern*	1.92123	0.28738	6.685***
style=*passage*	-1.29842	0.13460	-9.647***
lexical condition=*North Mandarin*	-1.43757	0.08392	-17.130***
morphological type=*irregular*	0.40678	0.08373	4.869*

Symbols following the z-values indicate the associated p-value: *** $p < 0.001$

Table 5.10: Significant effects in the general read speech model for neutral tone.



(a) Tonal realization by style for Xiamen speakers



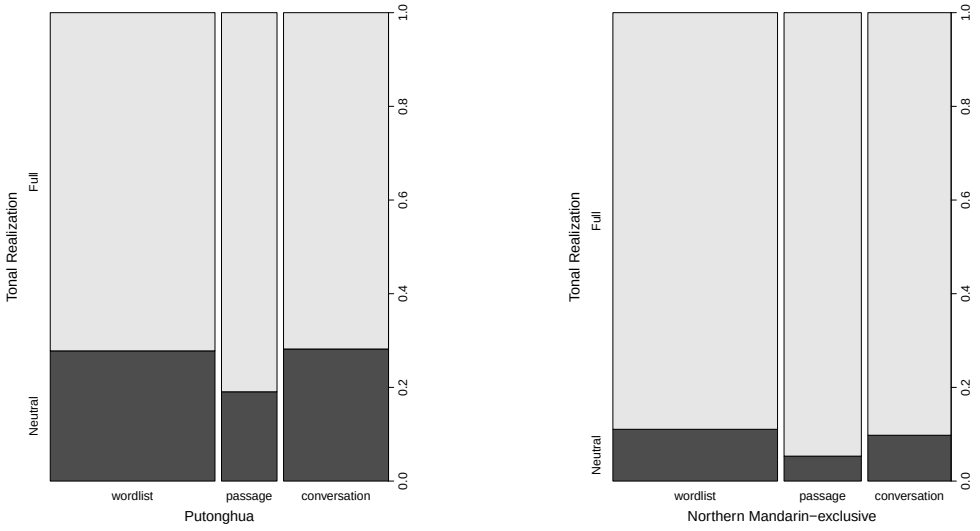
(b) Tonal realization by style for Northern speakers

Figure 5.9: Tonal realization by style for Xiamen and Northern speakers

The two figures also illustrate the significant effect of style. For both groups of speakers, the reading passage had the lowest rate of neutral tone realization compared to the other two styles. Given the design of the models, the difference between conversation and other two styles were not statistically tested. In the general read speech model, the difference between reading passage and wordlist did test significant.

This pattern is somewhat surprising given the prediction the Labovian "attention to speech" paradigm, which suggests that in a more formal style, there would be more attention paid to speech, resulting in more limited use of one's vernacular. It is also commonly assumed that speech formality decreases in the order of wordlist, reading passage, and conversation. Taken together, this paradigm would predict that the level of vernacular features used in the reading passage would fall between the wordlist and conversation, which is not what we observe in this case. For the other two styles, though, the interaction between style and place of origin patterned in an expected direction. As discussed in

Section 3.3, compared to codified *Putonghua*, the neutral tone lexical condition is rather restricted in Xiamen Mandarin, but much more expanded in Northern Mandarin (Lu, 1995; Q. Zhang, 2005). Compared to conversation, the more formal style of wordlist would likely elicit more *Putonghua*-like production than the respective vernacular for both Xiamen and Northern speakers. In other words, we would expect Xiamen speakers to use less neutral tone in conversation than in wordlist, but Northern speakers to use more neutral tone in conversation as opposed to in wordlist. These are the exact patterns represented in Figure 5.9.

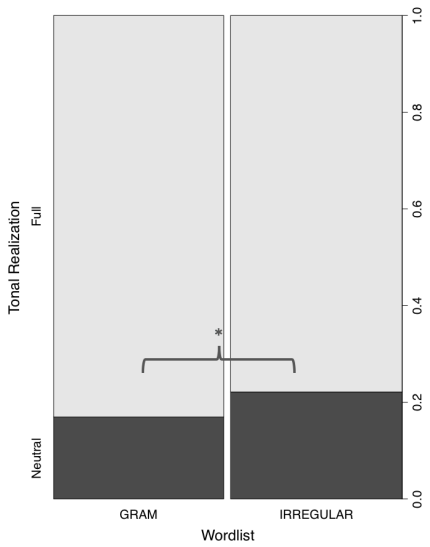


(a) Tonal realization by style for *Putonghua* lexical condition

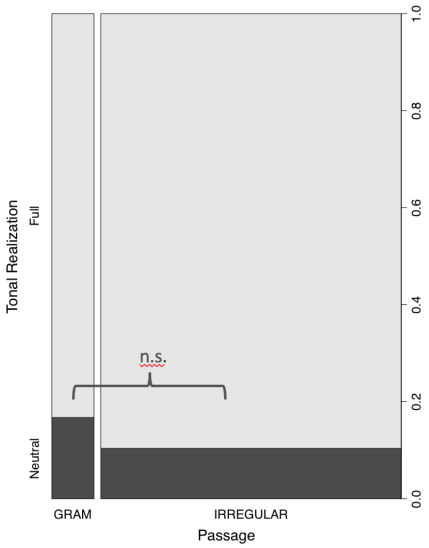
(b) Tonal realization by style for Northern Mandarin-exclusive lexical condition

Figure 5.10: Tonal realization by style for *Putonghua* and Northern Mandarin-exclusive lexical conditions for Xiamen and Northern speakers

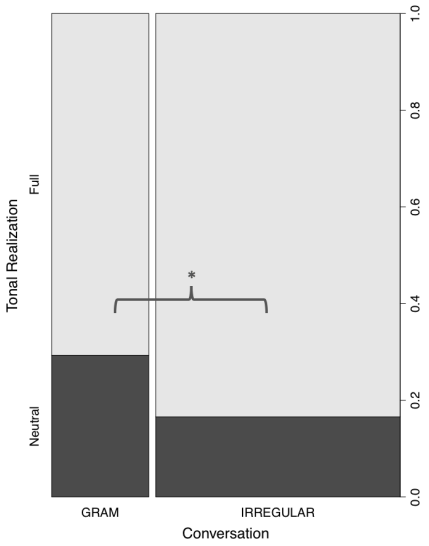
Lexical condition was also a significant predictor in both models. As shown in Figure 5.10, across all speech styles, speakers were more likely to produce words in the *Putonghua* lexical condition as neutral tone compared to those in the Northern Mandarin-exclusive condition.



(a) Tonal realization by morphological type for wordlist



(b) Tonal realization by morphological type for reading passage



(c) Tonal realization by morphological type for conversation

Figure 5.11: Tonal realization by morphological for wordlist, reading passage, and conversation for Xiamen and Northern speakers

Lastly, morphological type as a significant predictor in both models, although the direction of the effect differed. As shown in Figure 5.11, for the wordlist, speakers were more likely to produce words of the irregular type as neutral tone compared to those of the grammatical type, whereas in the other two styles, the grammatical type words were more likely to be produced with neutral tone compared to the irregular type words. Further testing on the subsetted data using mixed effects models with similar factor structure except for those involving style showed that the effect was significant for the wordlist, but not for the reading passage.

	Estimate	Std. Error	z-value
(intercept)	-1.59677	0.27364	-5.835
audience=*Northern*	0.54964	0.11248	4.887***
style=*conversation*	-0.58023	0.09678	-5.995***
Beijing orientation	0.52462	0.18020	2.911**
lexical condition=*North Mandarin*	-1.42469	0.09728	-14.645***

Symbols following the z-values indicate the associated p-value: *** $p < 0.001$, ** $p < 0.01$

Table 5.11: Significant effects in the audience model for neutral tone.

Audience regional background

In the audience model for neutral tone the random effect structure that still converged included only speaker random intercept and audience by speaker random slope. Table 5.11 shows the significant effects in this model. Of most relevance to the current study is the significant effect of audience, which patterned in the expected direction: the mobile Xiamen speakers were more likely to use neutral tone in the presence of their Northern friend than their Xiamen friend (see Figure 5.12). It is worth noting, though, that the effect size was relatively small. For wordlist and conversation data combined, 15.98% of the target words were realized as a neutral tone with a Northern audience, and 11.16% of the words had neutral tone realization with a Xiamen audience.

Beijing orientation also showed significant expected effect: speakers who scored higher for Beijing orientation were more likely to produce neutral tone compared to those who were less oriented towards Beijing. The difference between wordlist and conversation illustrated in Figure 5.9a tested significant as well: speakers were significantly more likely to produce neutral tone in wordlist than in conversation. With regard to lexical condition, the effect also echoes the pattern in the general model, such that the Xiamen speakers were more likely to produce words in the *Putonghua* lexical condition as neutral tone compared to those in the Northern Mandarin-exclusive lexical condition.

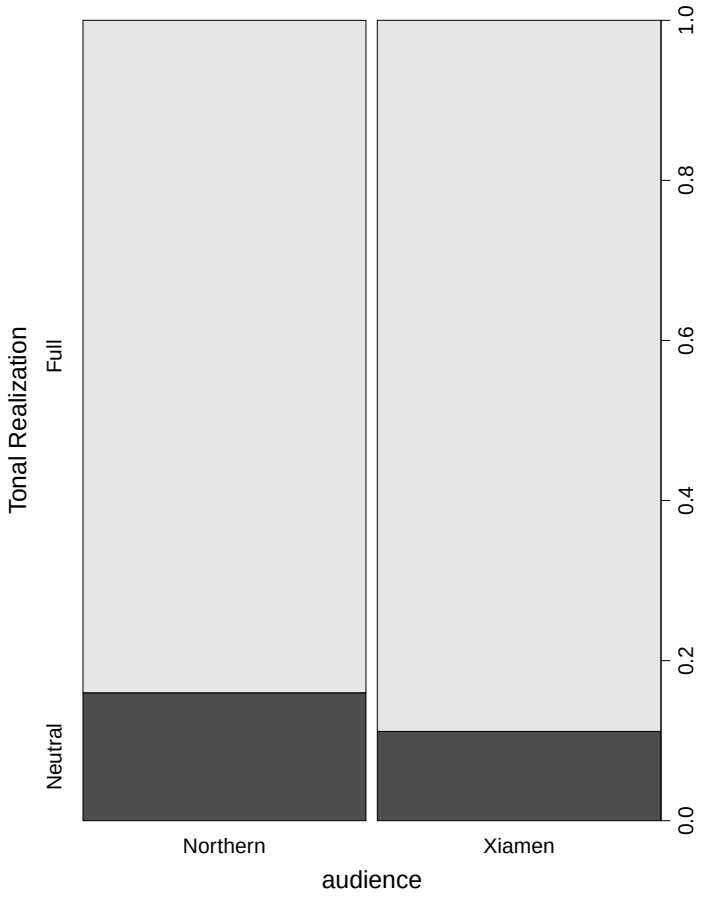


Figure 5.12: Tonal realization by audience regional background

Topic

Similar to the other two models for neutral tone, the random effects in the topic model were by speaker random intercept and topic by speaker random slope. The only significant factors here were the two linguistic factors. Similar to the pattern in Figure 5.11, speakers were significantly ($\chi^2(1, N = 1229) = 38.711, p < 0.001$) less likely to realize words in the Northern Mandarin-exclusive with a neutral tone. Another significant factor as morphological type: words of the type irregular was less likely to be realized with a neutral tone than the ones that were grammatical ($\chi^2(1, N = 1229) = 4.8098, p = 0.0283$).

5.2.2 Summary for neutral tone

The general model for neutral tone confirmed the documented pattern that Northern Mandarin speakers have more frequent use of neutral tone compared to the mobile Xiamen speakers. Furthermore, there also an expected interaction between region and style: while Northern Mandarin speakers had more neutral tone use in conversation compared to the wordlist, the Xiamen speakers had more neutral tone realization in the wordlist as opposed to in conversation. This pattern corresponds to the previous observation that compared to codified *Putonghua* the lexical condition for neutral tone was more expanded in Northern Mandarin (Lu, 1995; Q. Zhang, 2005), and more restricted in Xiamen Mandarin (R. Li, 1988). Such effect of lexical condition was explicitly tested in the model and shown to be significant. Both speaker groups were much more likely to realize the neutral tone target words in the *Putonghua* condition with a neutral tone than those in the Northern Mandarin-exclusive condition.

An expected significant effect of audience was observed for neutral tone as well. The mobile Xiamen speakers were more likely to produce a target word with neutral tone in the presence of their Northern friend compared to when interacting with their Xiamen friend. There was also the significant effect of Beijing orientation such that those who oriented

more positively to Beijing were more likely to use neutral tone. No significant topic effect was present.

5.3 /w/->[ʊ]

As discussed in Section 3.4, previous research has shown that the [ʊ] realization of /w/ is phonologically conditioned: it occurs only when followed by unrounded vowels (Shen, 1987; F. Wang, 2007; Wiener & Shih, 2013). In order to confirm how this linguistic conditioning affected the present data, in the two general models, the factor of following vowel (/a/, /ə/, /ei/, /ɔ/ or /u/) as well as its interaction with speaker place of origin was tested. In the audience and topic models, only /w/ production when followed by unrounded vowels were included in order to focus on the examination of the main predictions in the current study. In those cases, following vowel only included /a/, /ə/ and /ei/. Since the rounding of /w/ lowers F2, we would expect higher values for the F2-F1 difference to indicate less /w/-like or more [ʊ]-like production.

5.3.1 Results for /w/->[ʊ]

Establishing the baseline

Similar to the case with two other variables, two general models were made, one for conversation and one for read speech. In the general conversation model, for each speaker, I included the first six tokens for each of the five vowels when applicable. A total of 1481 tokens of /w/ were analyzed. In the read speech model, all /w/ tokens (N=5149) in the reading passage and wordlist were analyzed. For the general conversation model, the random effect structure that still converged included by speaker random intercept, by word random intercept, gender by word random slope, place of origin by word random slope, and following vowel by speaker random slope. For the general read speech model, by speaker

random intercept, by word random intercept, gender by word random slope, place of origin by word random slope, style by speaker random slope, and following vowel by speaker random slope.

The significant predictors in the two general model are shown in Table 5.12 and Table 5.13. Since previous research suggests that in Northern Mandarin, speakers tend to produce [ʊ] for /w/ when followed by unrounded vowels, we would expect that Northern speakers to have higher F2-F1 difference than Xiamen speakers when followed by /a/, /ə/ or /ei/, and that their F2-F1 difference is not significantly different from Xiamen speakers when the following vowel is /ɔ/ or /u/. This prediction is partially supported.

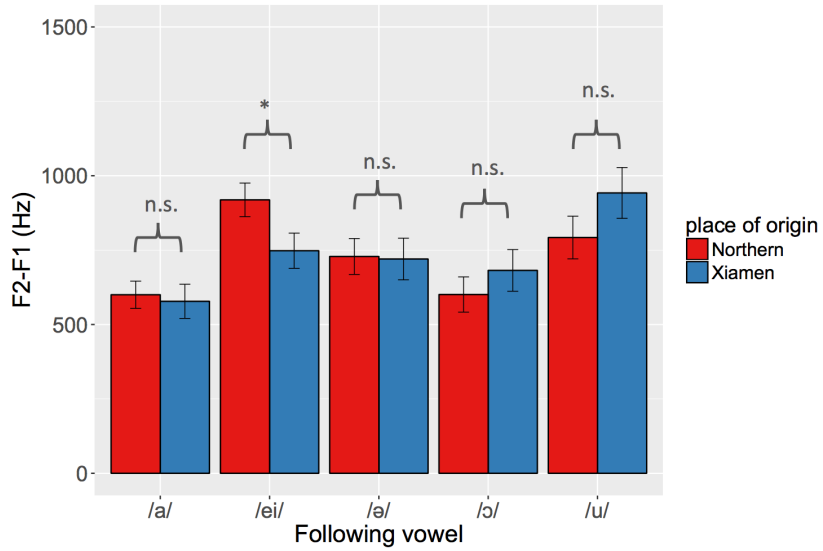
In both models, the interaction between speaker place of origin and following phone tested significant. In order to further understand how the two factors interact, each dataset (i.e. conversation, read speech) was further divided five subsets, each containing data from only one following vowel. Mixed effects linear regression models were then built for each of the ten subsets (5 following vowel * 2 datasets). For the subsets of conversation data, the fixed effects including place of origin and gender; for the subsets of the read speech data, style (wordlist vs. passage) was also included in addition to the two factors. The effects regarding place of origin from these models are represented in Figure 5.13. In both Figure 5.13a and 5.13b, we can see that when followed by unrounded vowels (/a/, /ə/ and /ei/), Northern speakers had higher F2-F1 values than their Xiamen counterparts, whereas when followed by rounded vowels (/ɔ/ and /u/), the pattern is reversed such that Xiamen speakers had higher F2-F1 values than Northern speakers. The results of the subsetted models, as indicated by the symbols above the Northern-Xiamen comparison suggested that the observed differences only tested significant for /ə/ in both conversation and read speech, and for /a/ in read speech. Therefore, we can conclude that when followed by unrounded vowels, the Northern speakers were more likely to produce the phoneme /w/ with higher F2-F1 difference, which indicates less rounding and more [ʊ]-like production, compared to Xiamen speakers. Thus, in the audience and topic models, only tokens followed

	Estimate	Std. Error	t-value
(intercept)	692.84	48.33	14.334
place of origin=*Northern*	159.64	63.75	2.504*
following vowel=*/ə/*	14.68	64.44	0.228
following vowel=*/a/*	-146.33	59.94	-2.441*
following vowel=*/ɔ/*	-12.45	83.03	-0.150
following vowel=*/u/*	200.98	74.22	2.708 **
place of origin=*Northern* : following vowel =*/ə/*	-89.04	87.82	-1.014
place of origin=*Northern* : following vowel =*/a/*	-136.80	77.56	-1.764
place of origin=*Northern* : following vowel =*/ɔ/*	-242.00	85.95	-2.815*
place of origin=*Northern* : following vowel =*/u/*	-272.97	105.40	-2.571*

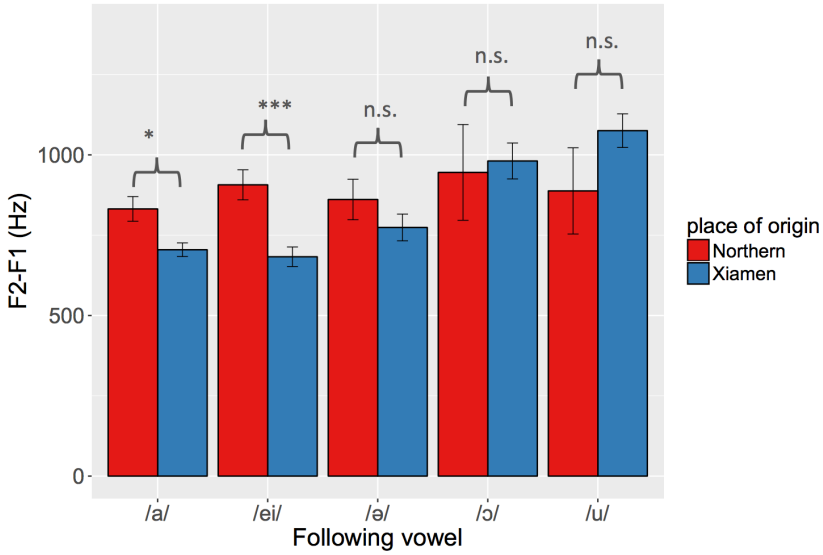
Symbols following the t-values indicate the associated p-value: ** $p < 0.01$, * $p < 0.05$

Table 5.12: Significant effects in the general conversation model for /w/->[ʊ].

by unrounded vowels were analyzed.



(a) F2-F1 (Hz) for /w/ by following vowel in conversation for Xiamen and Northern speakers



(b) F2-F1 (Hz) for /w/ by following vowel in read speech for Xiamen and Northern speakers

Figure 5.13: F2-F1 (Hz) for /w/ by following vowel for Xiamen and Northern speakers. Error bars indicate 95% confidence intervals. The symbols indicate the significance level for the comparisons between Xiamen and Northern speakers per vowel: *** $p < 0.001$, * $p < 0.05$, and n.s. for not significant.

	Estimate	Std. Error	t-value
(intercept)	784.914	48.671	17.548
place of origin=*Northern*	261.359	51.445	5.080***
following vowel=*/ə/*	55.550	47.346	1.173
following vowel=*/a/*	-37.776	33.132	-1.140*
following vowel=*/ɔ/*	180.370	50.832	3.549***
following vowel=*/u/*	302.560	49.281	6.139***
style=*passage*	-256.495	32.456	-7.903***
place of origin=*Northern* : following vowel =*/ə/*	-102.355	37.090	-1.499
place of origin=*Northern* : following vowel =*/a/*	-63.782	50.028	-1.275
place of origin=*Northern* : following vowel =*/ɔ/*	-246.433	86.774	-2.840**
place of origin=*Northern* : following vowel =*/u/*	-367.294	82.164	-4.470***

Symbols following the t-values indicate the associated p-value: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Table 5.13: Significant effects in the general read speech model for /w/->[ʊ].

Audience regional background

In the audience model, the random effects were by speaker random intercept, by word random intercept, audience by speaker random slope, style by speaker random slope, following vowel by speaker random slope, Beijing impression by word random slope, gender by word random slope, and school year by word random slope. The effect of audience was not a significant predictor in this model. As listed in Table 5.14, significant effects included style, gender and following vowel. The production in the wordlist had greater F2-F1 differences, and thus showed more [ʊ]-like pattern compared to that in the conversation. Female Xiamen speakers were also more likely to have greater F2-F1 values, and thus more [ʊ]-like production compared to male speakers. For following vowel, the only significant pairwise comparison was between /ei/ and /a/.

	Estimate	Std. Error	t-value
(intercept)	612.477	33.507	18.279
style=*conversation*	-70.921	23.139	-3.065**
gender=*male*	-80.666	28.033	-2.878**
following vowel=*/ə/*	31.187	39.046	0.799
following vowel=*/ei/*	61.931	26.134	2.370*

Symbols following the t-values indicate the associated p-value: ** $p < 0.01$, * $p < 0.05$

Table 5.14: Significant effects in the audience model for /w/->[ʊ].

Topic

The maximal random effect structure that still converged for the topic model for /w/->[ʊ] included by speaker random intercept, by word random intercept, topic by speaker random slope, and topic by speaker random slope. The significant effects for the model are represented in Table 5.15. The effect of topic tested significant, but was in an unexpected direction: when reading the Beijing passage, the mobile Xiamen speakers were more likely to produce lower F2-F1 differences, and thus more [w]-like, i.e. Xiamen Mandarin-like, production compared to when reading the Xiamen passage.

There was also a significant effect for school year, which was not observed for the other two variables. Figure 5.14 illustrates this effect: the sophomores had greater F2-F1 difference compared to the juniors and seniors. A similar trend is observed in audience model as well, although the effect was only marginally significant ($\chi^2(1, N = 4077) = 3.0551, p = 0.08048$). This apparent time difference could indicate that the mobile Xiamen speakers picked up this feature when they started college in Beijing, but the use of this D2 feature decreased over time.

5.3.2 Summary for /w/->[ʊ]

The documented difference between Northern Mandarin and Xiamen Mandarin was partially confirmed in the general models: Northern Mandarin had greater F2-F1 values, which

	Estimate	Std. Error	t-value
(intercept)	464.052	29.852	15.545
topic=*Beijing*	-48.98	23.54	-2.081*
school year=*junior&senior*	-71.396	27.71	-2.576*
following vowel=*/ə/*	172.416	29.214	5.902***
following vowel=*/ei/*	99.82	22.51	4.434*

Symbols following the t-values indicate the associated p-value: ** $p < 0.01$, * $p < 0.05$

Table 5.15: Significant effects in the topic model for /w/->[ʊ].

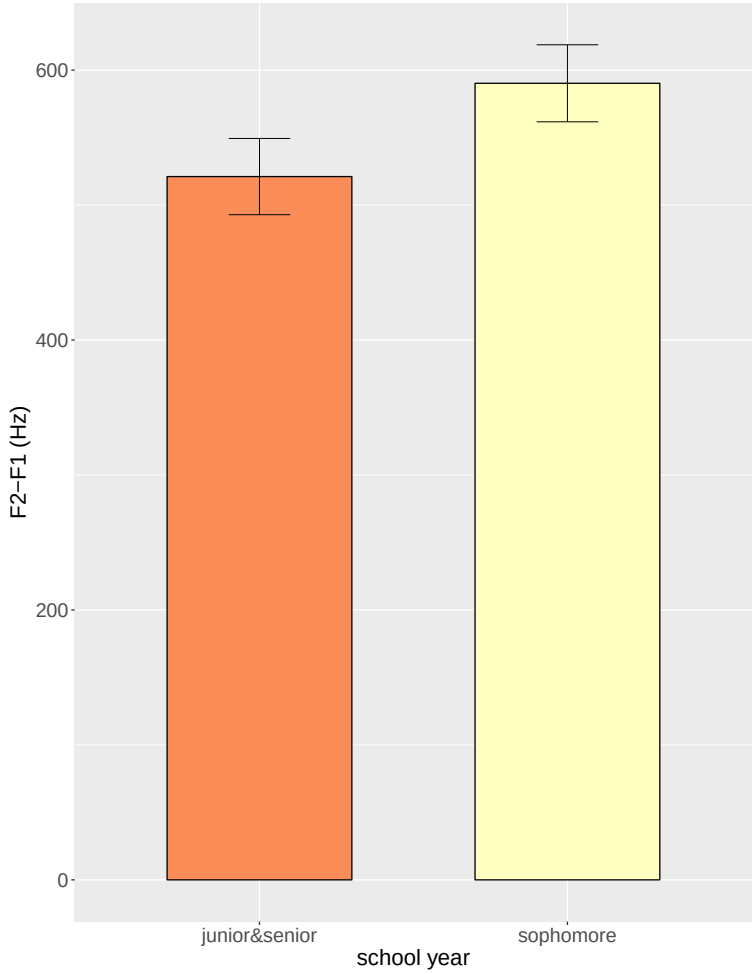


Figure 5.14: F2-F1 (Hz) by school year for reading passage

indicate more [ʊ]-like production when followed by some of the unrounded vowels.

No effect of audience was found for /w/->[ʊ]. There was a significant effect for topic, but was in an unexpected direction: the Beijing passage showed more Xiamen Mandarin-like pattern, which will be addressed in the discussion chapter. There was also an overall trend for school year such that the sophomores were more likely have greater F2-F1 values, thus more [ʊ]-like production, compared to juniors and seniors.

5.4 Summary

An effect of audience was found for the /s/-/ʂ/ contrast and neutral tone, but not for /w/->[ʊ]. For /ʂ/, the mobile Xiamen speakers had more back production in the presence of Northern audience, which corresponded to the Northern control data. For /s/, Xiamen speakers also had more back production with their Northern friends, which was unexpected. As will be elaborated in Section 7.2, I interpret this pattern as a result of hypercorrection from /s/ to /ʂ/ and argue that this seemingly divergent behavior is better understood as a form of "subjective convergence" (Thakerar et al., 1982), where speakers accommodate to what their believed to be the linguistic pattern of their interlocutors. For neutral tone, the Northern friend condition saw more use of neutral tone, as expected. In addition to the audience effect, these two linguistic features also differed from /w/->[ʊ] in that the attitudinal factor of Beijing orientation predicted the use of Northern Mandarin features: speakers who oriented more positively towards Beijing patterned more like their Northern Mandarin peers as opposed to those with more negative impression of Beijing. Beijing orientation also interacted with the audience effect for /ʂ/.

The topic effect did not test significant for /s/-/ʂ/ contrast and neutral tone, although the trend was in the expected direction. In contrast, it was in an unexpected direction for /w/->[ʊ]. I will discuss several potential reasons for this observation in Chapter 7, and one of them lies in the limited use of Northern Mandarin variants in the style of reading passage

in general. As I mentioned earlier in the chapter, the "attention to speech" paradigm would predict that the use of vernacular features will increase following the order of wordlist, reading, and conversation. While the Xiamen participants' production was consistently more Northern Mandarin-like in wordlist than in conversation across all linguistic features, the production in the reading passage remained the least Northern Mandarin-like of the three styles in both neutral tone and /w/->[ʊ]. Such overall limited use of Northern Mandarin could limit the room for topic-based shift, which has been shown to have small effect size in the previous literature (Love & Walker, 2013; Walker, 2014).

To conclude, in this chapter, I discussed how the manipulation of place in the form of audience regional background as well as place-based topic influenced the use of D2 Northern Mandarin features for the mobile Xiamen speakers. The audience effect was significant for /ʂ/ and neutral tone such that the production shifted in the direction of their audience, and the attitudinal factor of Beijing orientation score also correlated positively with the production in conversation and wordlist. For /ʂ/, Beijing orientation also interacted with the audience effect, such that the less Beijing-oriented speakers were more likely to use Xiamen Mandarin-like production when talking to their Xiamen friend compared to when talking to their Northern friend, while more Beijing-oriented speakers showed less audience effect. No clear effect of topic was found. These findings show that at least for /ʂ/, there is a strong sign that the mobile Xiamen speakers were using stylistic shifts to construct their shifting place-based identities. In the next chapter, I will report the results of an online experiment I conducted among mobile Xiamen college students and graduates in Beijing, which examined the social evaluation the D2 variants for the same three linguistic features when adopted by Xiamen Mandarin-sounding talkers.

Chapter 6

Social Perception

In this chapter, I discuss the results of the social perception study to examine the social meanings of Xiamen Mandarin and the acquired Northern Mandarin features for the relocated Xiamen Mandarin speakers.

Based on the results from the factor analysis on the rating items discussed in Section 4.2.4, I first built mixed-effects linear regressions models for each of the four dimensions of ratings, namely, BEIJING, LIKABILITY, EDUCATEDNESS, and DYNAMISM using the lme4 package in R (R Core Team, 2018). These FOUR models will be referred to as the general models. When variable was a significant predictor in the general models, I also constructed models for each individual linguistic features separately to obtain a better understanding of the different effects for each feature. Therefore, for each dimension, I will first present results from the models involving all linguistic features, and discuss the model for each linguistic feature if applicable.

The mixed-effects linear regression models constructed all included design-driven maximal slopes (Barr et al., 2013). Maximum likelihood model comparison was used to generate the p-values. The dependent variables were BEIJING, LIKABILITY, EDUCATEDNESS, or DYNAMISM. In the models that included all linguistic features, the independent variables were:

- variable (/ʂ/, neutral tone, or /w/->[ʊ])
- guise (Xiamen Mandarin or D2 Northern Mandarin)
- school year of listener (freshman&sophomore, junior&senior, graduates)

- gender of listener (female or male)
- dialect background of listener (speaker Min regionalect or Mandarin monolingual)
- the trial a given stimulus was presented in (1 to 6)
- XIAMEN-PLEASANT (continuous, -2.5 2.2)
- XIAMEN-STATUS (continuous, -2.5 3.9)
- NORTH (continuous, -4.6 2.9)
- XIAMEN-RETURN (continuous, -2.2 1.5)

The interaction between variable and guise, as well as the two-way interactions between guise and the four listener traits were also tested in all models in the initial run. Treatment contrasts were used for all fixed effects. The random effect structure included by talker random intercept, variable by talker random slope, guise by talker random slope, by listener random intercept, variable by listener random slope, and guise by listener random slope.

In the models for the individual linguistic features, the fixed effects remained the same except for the factor of variable, the random effects included the two abovementioned random intercepts and the guise by talker random slope.

6.1 BEIJING

As indicated by the factor analysis, the scores for the dimension of BEIJING represent listeners' perception regarding whether the talker was willing to build connections with the Northern Mandarin-speaking community and seek professional developments in Beijing. Table 6.1 shows the significant effects for the initial model. Of most interest to the present study is the effect of guise, which patterned in an expected direction: when the mobile Xiamen talkers used the D2 Northern Mandarin guise, the listeners were significantly more likely to give higher ratings on items related to the orientation to Beijing. There is also an

	Estimate	Std. Error	t-value
(intercept)	-0.128374	0.209345	-0.613
guise=*D2 Northern*	0.430824	0.117612	3.663***
variable=/ʂ/	-0.033617	0.109265	-0.308
variable=*neutral tone*	0.23527	0.124141	1.929
XIAMEN-STATUS	0.187740	0.055898	3.359**
XIAMEN-RETURN	-0.061376	0.069909	-0.878
variable=*neutral tone*: guise=*D2 North*	-0.375779	0.152675	-2.461*
variable=/ʂ/: guise=*D2 North*	-0.330807	0.152123	-2.175*
guise=*D2 North*: XIAMEN-RETURN	-0.138023	0.067121	-2.056*

Symbols following the t-values indicate the associated p-value: ** $p < 0.01$, * $p < 0.05$

Table 6.1: Significant effects in the initial model for BEIJING for all linguistic features.

effect for the variable: neutral tone had the highest scores for BEIJING, followed by /w/->[ʊ], and /ʂ/ had the lowest scores. The interaction between guise and variable also tested significant. Figure 6.1 illustrates the two main effects as well as the interaction. While the D2 Northern guise receives higher ratings than the Xiamen guise in general, the difference between the two guises is the greatest for /w/->[ʊ], less so for /ʂ/, and the least for neutral tone.

Aside from these two main effects, two factors related to listener traits were also shown to be significant predictors. First, those who scored higher on XIAMEN-RETURN were less likely to rate the talkers as Beijing-oriented. An interaction was also tested significant between guise and XIAMEN-RETURN, as illustrated in Figure 6.2. The fairly flat regression line for the Xiamen guise suggests that whether the listeners intended to return to Xiamen does not seem to affect their evaluation of the Xiamen guises the dimension of BEIJING. Rather, the effect of XIAMEN-RETURN is much stronger for the D2 Northern guises. The interaction between variable and XIAMEN-RETURN was tested, but no significance was found.

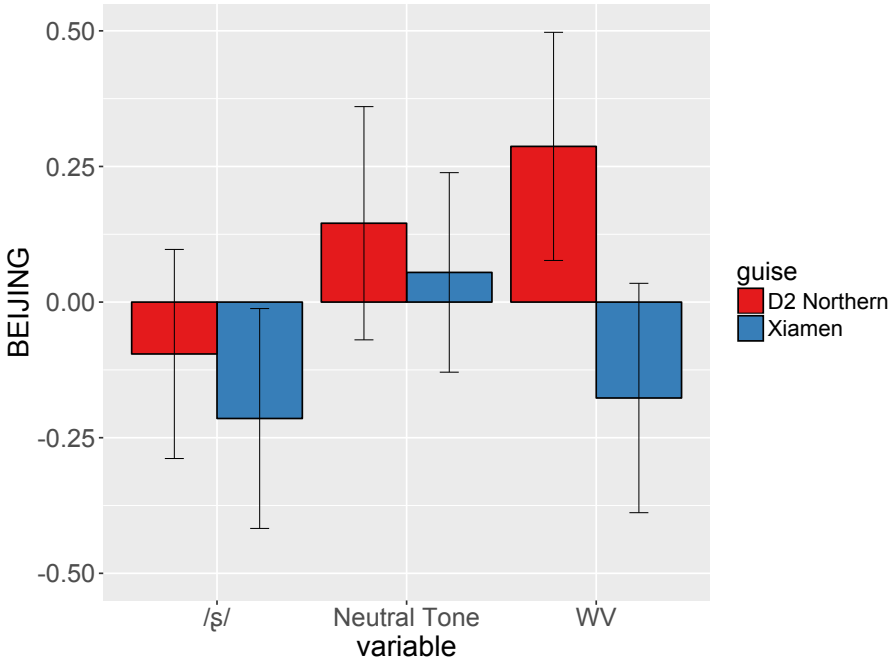


Figure 6.1: BEIJING scores by variable and guise

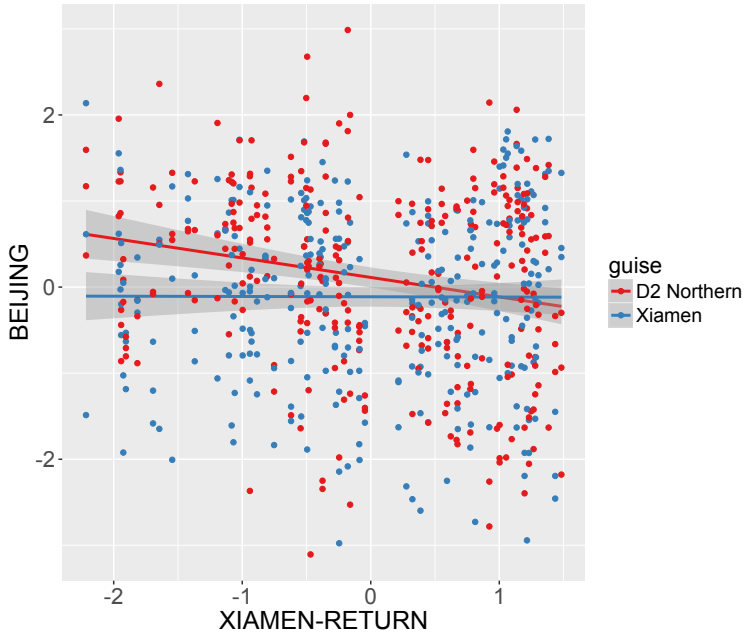


Figure 6.2: BEIJING scores by XIAMEN-RETURN and guise for all linguistic features

	Estimate	Std. Error	t-value
(intercept)	-0.26691	0.32440	-0.823
XIAMEN-STATUS	0.17862	0.06722	2.657**
NORTH	0.13136	0.05777	2.274*
XIAMEN-RETURN	-0.15349	0.07230	-2.123*

Symbols following the t-values indicate the associated p-value: ** $p < 0.01$, * $p < 0.05$

Table 6.2: Significant effects in the model for BEIJING for /ʂ/.

There was also an effect of XIAMEN-STATUS: the listeners who gave higher ratings for items captured by XIAMEN-STATUS were more likely to give higher ratings for the dimension of BEIJING.

Since variable was a significant predictor in the general model, additional models were built to examine the effects for each individual linguistic feature.

/ʂ/

Table 6.2 shows the significant main effects for BEIJING for the /ʂ/ passage. We can see that the directions of XIAMEN-STATUS and XIAMEN-RETURN were the same as the general model discussed above. Additionally, NORTH was also a significant predictor; the listeners who scored higher for this dimension, namely, those who expressed more favorable opinions on the status and pleasantness of Northern Mandarin, gave higher ratings for BEIJING.

Neutral tone

No predictor tested significant in this model.

/w/->[ʊ]

As is shown in Table 6.3, the significant main effects for the /w/->[ʊ] model were the same as the general model, and the directions for the effects were also the same. In addition, the

	Estimate	Std. Error	t-value
(intercept)	-0.302895	0.306539	-0.988
guise = *D2 Northern*	0.431236	0.161669	2.667*
XIAMEN-STATUS	0.227057	0.073301	3.098**
XIAMEN-RETURN	-0.182790	0.078416	-2.331*

Symbols following the t-values indicate the associated p-value: ** $p < 0.01$, * $p < 0.05$

Table 6.3: Significant effects in the model for BEIJING for /w/->[ʊ].

interaction between guise and XIAMEN-RETURN was also tested significant ($\chi^2(1, N = 208) = 5.25, p = 0.02195$); the effect of XIAMEN-STATUS was much stronger for the D2 Northern than the Xiamen guise.

6.2 LIKABILITY

The scores for LIKABILITY captured personality traits like "warm", "likable", "tend to *sajiao*", and "energetic". Table 6.4 shows the significant predictors revealed in the initial run of the model. While fixed factors of guise and variable were not significant, there was a significant interaction between the factors as illustrated in Figure 6.3. Based on the figure, we can see distinctly different patterns regarding how the effect of guise works across the three linguistic features. First, while the difference between two guises were rather small for /ʂ/, they were considerably greater for the other variables. Furthermore, the direction of the effect were also different: for /ʂ/ and neutral tone, D2 Northern Mandarin was rated higher on LIKABILITY, whereas for /w/->[ʊ], Xiamen Mandarin was rated higher on this personality trait. The complex pattern motivated the construction of the models for the individual linguistic variables.

Additionally, two listener trait factors were also significant predictors for LIKABILITY. Similar to the case with BEIJING, listeners who scored higher for XIAMEN-STATUS were more likely to give higher ratings for LIKABILITY. Also, those who gave higher scores for NORTH were more likely to give higher ratings for this dimension, as shown in Figure 6.4.

	Estimate	Std. Error	t-value
(intercept)	-0.203533	0.196632	-1.035
guise=*D2 Northern*	-0.461514	0.131384	-3.513**
variable=/ʂ/	-0.123446	0.124991	-0.988
variable=*neutral tone*	-0.022615	0.140830	-0.161
XIAMEN-STATUS	0.228363	0.04959	3.908***
NORTH	0.193783	0.049590	3.90***
variable=*neutral tone*: guise=*North*	0.647696	0.163256	3.967***
variable=/ʂ/: guise=*North*	0.539189	0.162439	3.319

Symbols following the t-values indicate the associated p-value: *** $p < 0.001$, ** $p < 0.01$

Table 6.4: Significant effects in the initial model for LIKABILITY for all linguistic features. [1]

	Estimate	Std. Error	t-value
(intercept)	-0.185398	0.257948	-0.719
XIAMEN-PLEASANT	0.155285	0.077112	2.014*
XIAMEN-STATUS	0.344397	0.085078	4.048***
NORTH	0.163752	0.088285	2.344*

Symbols following the t-values indicate the associated p-value: *** $p < 0.001$, * $p < 0.05$

Table 6.5: Significant effects in the model for LIKABILITY for /ʂ/.

/ʂ/

For /ʂ/, guise was not a significant predictor. Three listener trait factors tested significant: XIAMEN-PLEASANT, XIAMEN-STATUS, and NORTH. Listeners who found Xiamen Mandarin pleasant were more likely to rate the stimuli as more likable. The other two effects resembled the pattern in the general model in terms of direction.

[1] Although the main effect of variable was not significant, it is included in the table for the interpretation of the interaction.

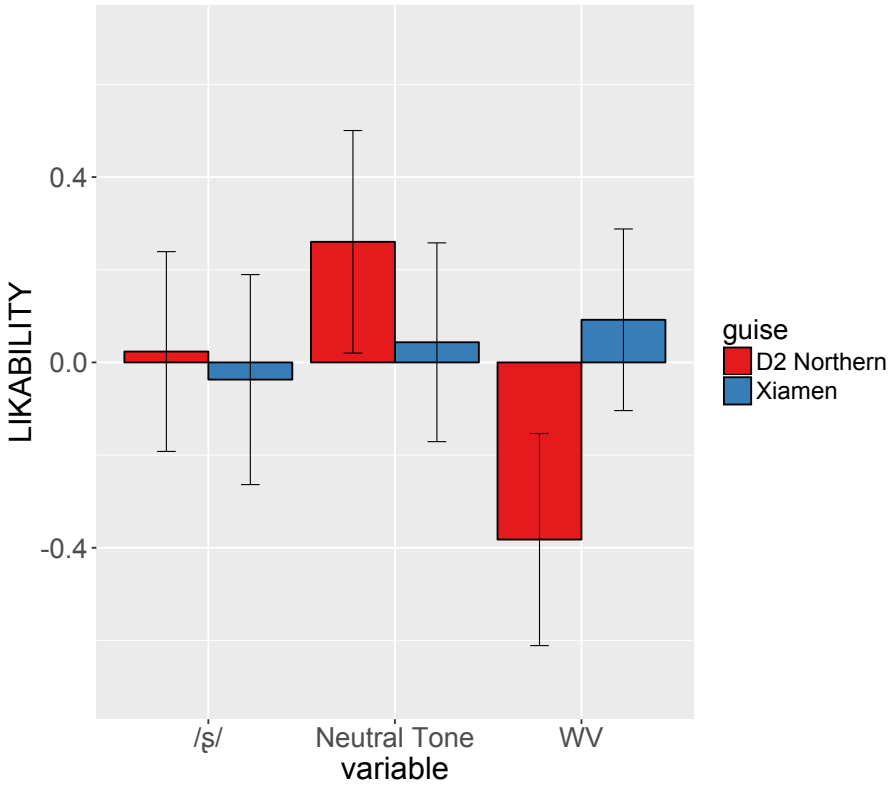


Figure 6.3: LIKABILITY scores by variable and guise. Error bars indicate 95% confidence intervals.

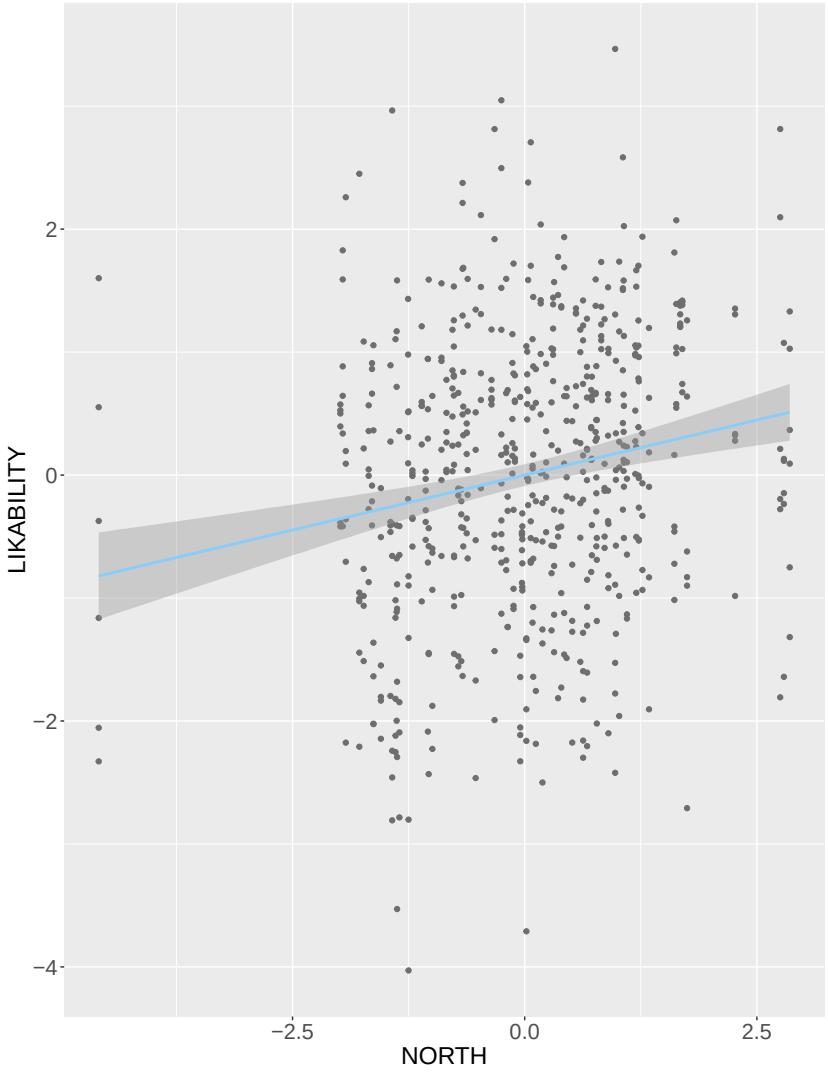


Figure 6.4: LIKABILITY scores by NORTH. The line represents a linear regression between the two factors surrounded by 95% confidence interval.

	Estimate	Std. Error	t-value
(intercept)	-0.14531	0.25843	-0.562
guise = *North*	-0.45408	0.12751	-3.561***
XIAMEN-STATUS	0.21624	0.08014	2.698**
NORTH	0.18826	0.06575	2.863**

Symbols following the t-values indicate the associated p-value: ** $p < 0.01$

Table 6.6: Significant effects in the model for LIKABILITY for /w/->[ʊ].

Neutral tone

In the model for neutral tone, only the factor of NORTH was significant ($\chi^2(1, N = 208) = 8.9803, p < 0.01$). Those who were more in favor of Northern Mandarin in general were more likely to rate the neutral tone passage as more likable compared to listeners who were not, as reflected in Figure 6.9(b). Similar to the general model, XIAMEN-STATUS and NORTH were significant predictors that were positively related to the LIKABILITY scores.

/w/->[ʊ]

For /w/->[ʊ], guise was a significant predictor; as shown in Figure 6.3, the D2 Northern Mandarin guise received lower rating for the personality trait of LIKABILITY.

6.3 EDUCATEDNESS

Unlike the two personality traits discussed so far, there was no significant effect of variable or guise or their interaction on EDUCATEDNESS. However, there was a significant interaction guise and XIAMEN-STATUS, which measures listeners' views on the social status of Xiamen Mandarin and Taiwan Mandarin, as shown in Table 6.7. This interaction is illustrated in Figure 6.5. In this figure, we can see that the slope for the Xiamen guise is much steeper than the one for the D2 Northern guise, which indicates that XIAMEN-STATUS has more influence on the ratings of Xiamen guise than the D2 Northern guise. Specifically, those

	Estimate	Std. Error	t-value
(intercept)	-0.050255	0.263041	-0.191
trial	-0.057108	0.020769	-2.720**
XIAMEN-PLEASANT	0.157107	0.057136	2.750**
guise=*D2 Northern*: XIAMEN-STATUS	-0.153614	0.067937	-2.261*

Symbols following the t-values indicate the associated p-value: ** $p < 0.01$, * $p < 0.05$

Table 6.7: Significant effects in the initial model for EDUCATEDNESS for all linguistic features.

who gave higher ratings for XIAMEN-STATUS were more likely to rated Xiamen Mandarin higher on the EDUCATEDNESS dimension. This effect is in the expected direction.

Figure 6.6 presents the effect of trial; the negative slope for trial, as shown in Table 6.7, suggests that when a stimulus was presented later, it was rated lower on the personality trait of EDUCATEDNESS. A possible explanation for this effect could be the semantic bias of the stimuli. As discussed in Section 4.1.3, all three passages were about stories happened on college campus. Since the main contributors to the dimension of EDUCATEDNESS were "educatedness", "smart", and "*xueba*", although the stimulus was clearly read speech, the fact that the talkers were discussing campus life could have lead the listeners to believe that they were fellow college students as well, who would be likely considered as educated. Recall that each listener was assigned a list in which they listened to three different passages, and then the repetition of the same passages with different guises. As a result, when a stimulus was heard as one of the last three recordings, we would expect this semantic bias to wear off.

Lastly, there was an effect for XIAMEN-PLEASANT such that the listeners who reported Xiamen Mandarin as more pleasant-sounding were more likely to give high ratings for EDUCATEDNESS.

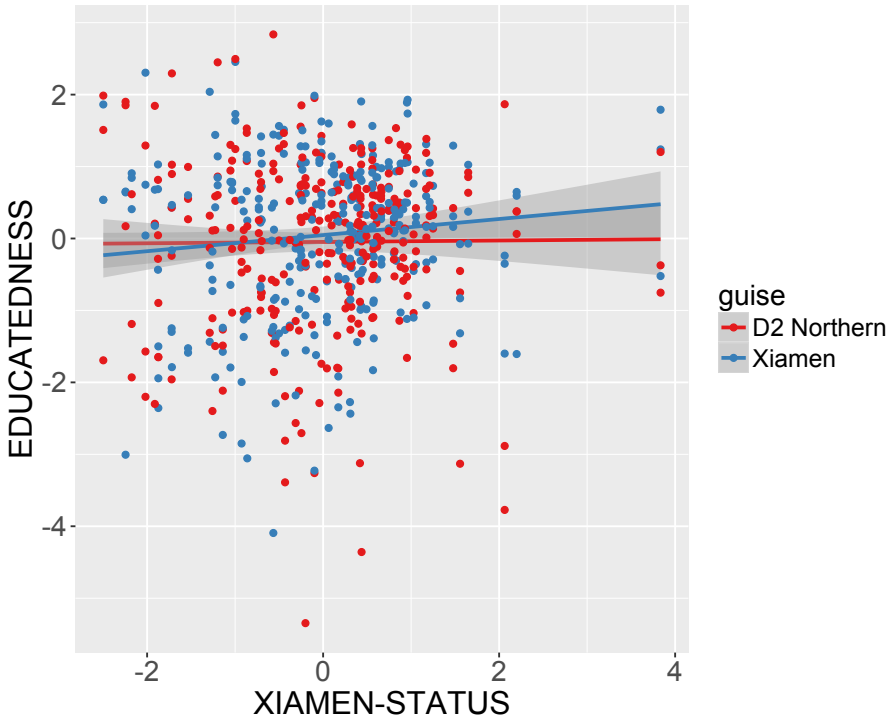


Figure 6.5: EDUCATEDNESS scores by XIAMEN-STATUS by guise.

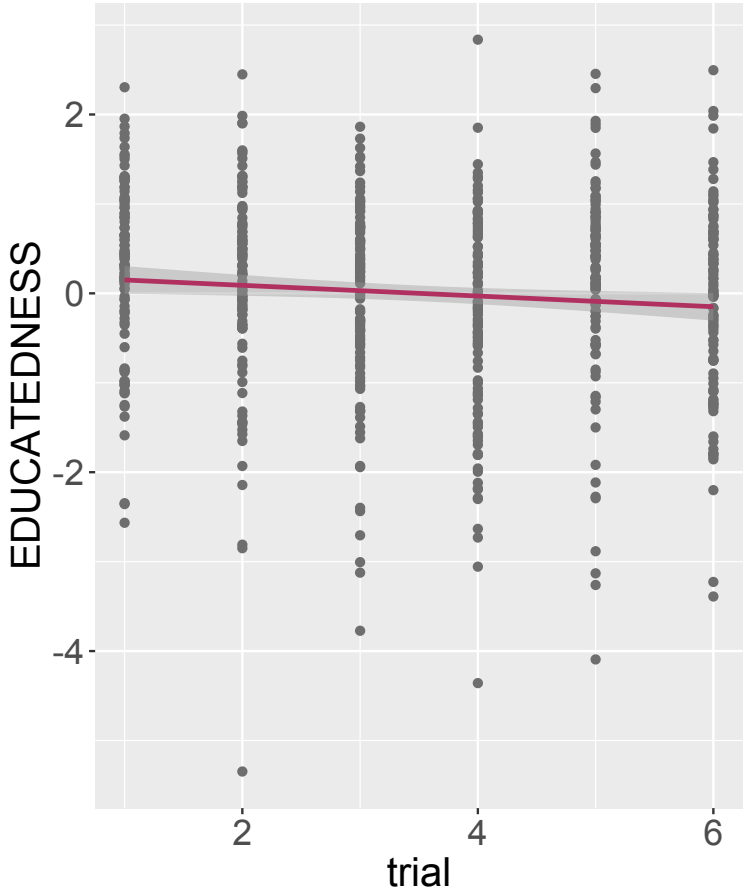


Figure 6.6: EDUCATEDNESS scores by order for all linguistic features. The line represents a linear regression between the two factors surrounded by 95% confidence interval.

	Estimate	Std. Error	t-value
(intercept)	-0.61524	0.23178	-2.654
guise=*D2 Northern*	0.25655	0.09776	2.624**
variable=*WV*	0.55729	0.11967	4.656***
variable=*neutral tone*	0.38194	0.11958	2.624**

Symbols following the t-values indicate the associated p-value: *** $p < 0.001$, ** $p < 0.01$

Table 6.8: Significant effects in the initial model for DYNAMISM for all linguistic features.

6.4 DYNAMISM

The initial model that included the independent factors and random effects structure failed to converge. Separating the random slopes and random intercept did not lead to convergence. Taking out either variable by talker random slope or variable by listener random slope was also inadequate. Thus, the random effects general model discussed here only included the two random intercepts as well as the guise by talker and guise by listener random slopes.

As shown in Table 6.8, the main effects of guise and variable were significant. Of most interest to the current study is the effect of guise; the D2 Northern Mandarin guise received higher DYNAMISM rating than the Xiamen Mandarin, as reflected in Figure 6.7. This pattern aligns with the metalinguistic commentary from the mobile Xiamen speakers in the production study: Northerners are often perceived as blunt and outgoing.

With regard to variable, as shown in Figure 6.8, /w/->[ʊ] had highest DYNAMISM score, followed by neutral tone, and /ʂ/ had the lowest score. As indicated in Table 6.8, the score for /ʂ/ is significantly different from the other two variables. However, the difference between neutral tone and /w/->[ʊ] did not differ significantly when the model was run with the relevelled factor. Although the interaction between guise and variable did not test significant, the effect of variable still motivated the construction of models for the individual linguistic features.

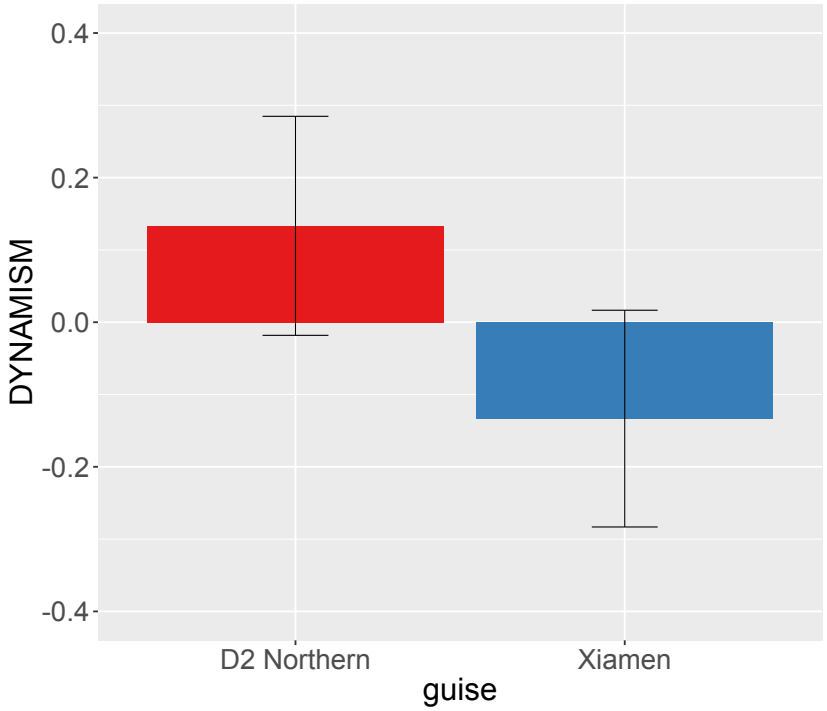


Figure 6.7: DYNAMISM scores by guise for all linguistic features. Error bars indicate 95% confidence intervals.

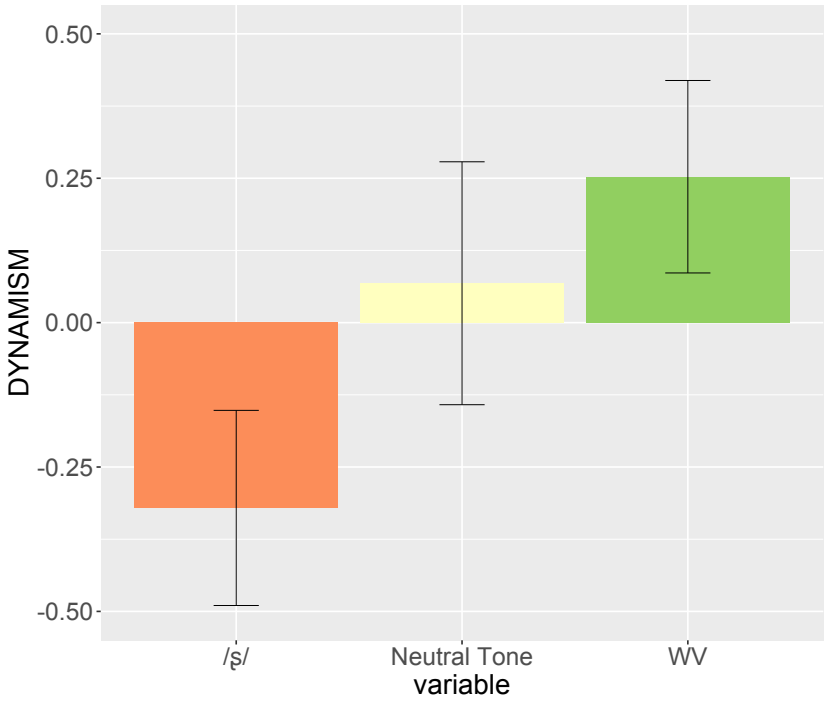
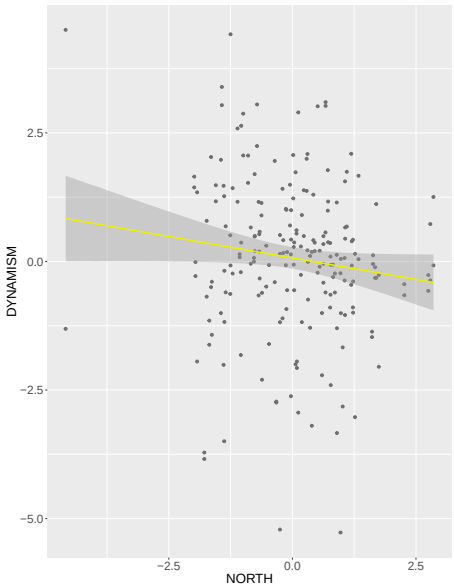
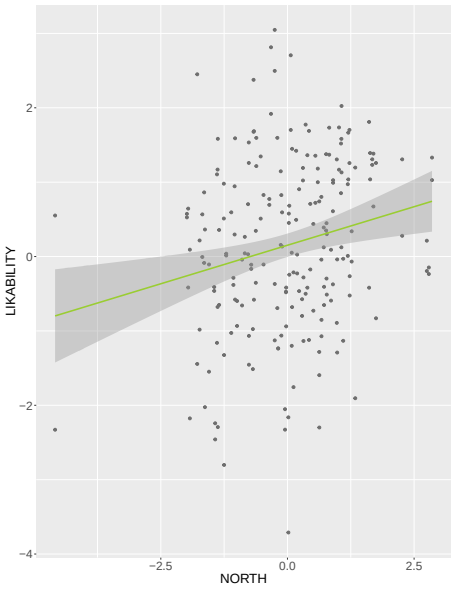


Figure 6.8: DYNAMISM scores by variable for all linguistic features. Error bars 95% confidence intervals.



(a) DYNAMISM by NORTH for the neutral tone passage



(b) LIKABILITY by NORTH for the neutral tone passage

Figure 6.9: The effects of NORTH for the neutral tone passage

/ʂ/

In the model for /ʂ/, guise was the only significant predictor ($\chi^2(1, N = 208) = 4.3759, p = 0.03645$). Similar to the effect of guise in the general model, the D2 Northern guise received significantly higher rating than the Xiamen guise.

Neutral tone

For neutral tone, only the listener trait of NORTH was significant ($\chi^2(1, N = 208) = 4.2732, p = 0.03872$). In contrast to the LIKABILITY model for neutral tone, in which NORTH was also a significant predictor, for DYNAMISM, there is a negative relationship between the two factors. Figure 6.9 shows a comparison of the effects of NORTH for the two personality traits.

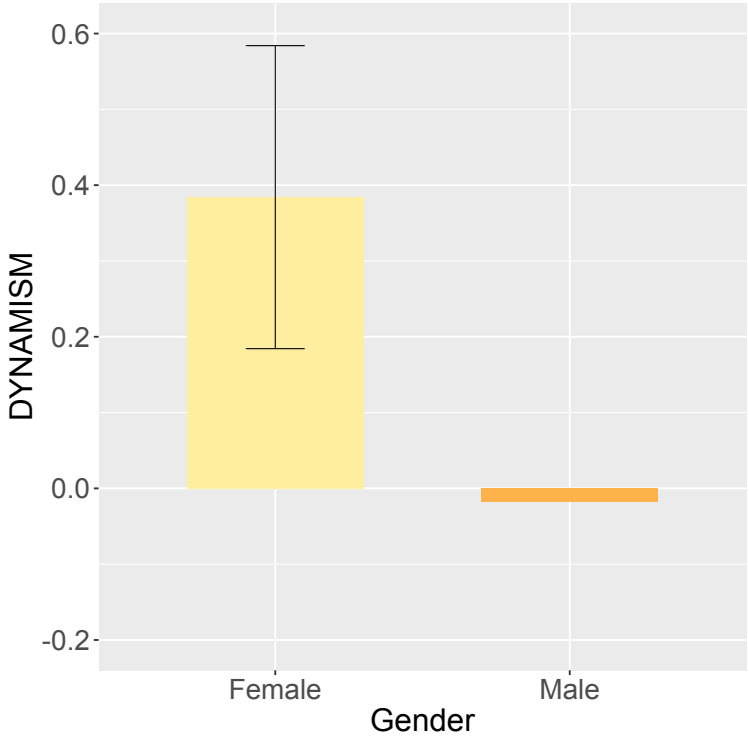


Figure 6.10: DYNAMISM scores by gender for /w/->[ʊ]. Error bars indicate 95% confidence intervals.

/w/->[ʊ]

The model for /w/->[ʊ] revealed the significant effect of listener gender ($\chi^2(1, N = 208) = 5.132, p = 0.02349$). Male listeners were less likely to give higher ratings for DYNAMISM compared to their female counterparts for the /w/->[ʊ] passage, as shown in Figure 6.10.

6.5 Summary of findings

To begin with, among the general models, guise had a significant effect on BEIJING and DYNAMISM, and the interaction between guise and variable was significant for BEIJING and LIKABILITY. Further testing on individual linguistic features revealed that most of the guise effects in the general models were likely driven by the effect for a single variable.

For BEIJING and LIKABILITY, guise was only significant for /w/->[ʊ], whereas for DYNAMISM, guise was a significant predictor in the /ʂ/ model. All of the significant guise effects were consistently in the expected direction: the D2 Northern guises received higher ratings for BEIJING and DYNAMISM and lower ratings for LIKABILITY compared to the Xiamen guises. In other words, when mobile speakers adopted Northern Mandarin variants, they would be perceived as more likely to establish ties with Northern friends and continue to seek professional development in Beijing. The use of the D2 variants also leads to the perception of a more talkative and energetic, yet less warm and likable persona.

Several factors related to listener traits also showed significant effects in an expected fashion. For the trait EDUCATEDNESS, there was a significant interaction between guise and XIAMEN-STATUS, the trait that represents listeners' view on the social standing of Xiamen and Taiwan Mandarin. The direction of the effect was such that listeners who gave higher ratings on XIAMEN-STATUS were more likely to rate the Xiamen guise higher on the dimension of EDUCATEDNESS, but ratings on XIAMEN-STATUS did not affect the ratings for the D2 Northern guise. This pattern shows that listeners' explicit language ideology regarding the status of Xiamen Mandarin is reflected in their social evaluation of Xiamen Mandarin features.

XIAMEN-RETURN, the trait that captures the listeners' willingness to go back to Xiamen, was a significant predictor for BEIJING and interacted with the effect of guise. A closer examination of the interaction revealed that the main effect was likely driven by the D2 Northern guise: listeners who scored lower for XIAMEN-RETURN tended to give higher ratings for the D2 Northern guise for the trait of BEIJING. That is to say, listeners who were less likely to return to Xiamen themselves tended to hear the more Northern-sounding Xiamen speakers as more likely to seek academic or career advancements away from home. This effect reveals an ideology that links social mobility to linguistic mobility. Such an ideology echoes the findings in Dong's (2016) analysis of a member of the middle-class elite migrant groups in China (See Section 2.7). The Northern Mandarin speaker who relocated

to Shanghai incorporates elements of "Hong Kong-Taiwan accent" into his Mandarin, learns foreign languages, and avoids the use of his regionalect, all of which coincides with his orientation towards social mobility on a pan-Chinese scale.

For the trait of LIKABILITY, NORTH was a consistent predictor for the general model as well as the ones for the individual linguistic features. Recall that the dimension of NORTH captures listeners' views on the social status and pleasantness of Northern Mandarin, standard language ideology, and accent shift. Therefore, we can interpret higher scores for this dimension as greater appreciation for the prescribed standard. Notwithstanding the manipulations to the critical linguistic features, the style of read speech rendered the stimuli more controlled than casual. Additionally, compared to the popular image of the accented Fujian/Xiamen Mandarin speaker, the linguistic production of these college-educated female talkers would likely be taken as a less-accented version of Xiamen Mandarin overall. In this context, it is not too surprising to see that those who favored the standard accent were more likely to rate the stimuli as likable.

Some effects were harder to explain. Some of them were only found in the models for the individual factors. For example, with regard to DYNAMISM, NORTH was a significant predictor for neutral tone, and gender had a significant effect only for /w/->[ʊ]. Although the patterns could be intriguing, given the design of the study, it is difficult to pinpoint what aspect of the stimuli triggered such effects. XIAMEN-STATUS and XIAMEN-PLEASANT were also shown to have main effects for the three of the four personality trait dimensions. However, unlike NORTH, which reflects listeners' explicit perception on a regional variety as well as the prescribed standard, these two listener traits concentrated solely on the evaluation of Xiamen Mandarin and/or the so-called "Taiwanese accent". Thus, it was difficult to interpret the influence of these two effects when there was no interaction with guise present.

In this chapter, I discuss the results of the social perception study and found effect of guise (Xiamen vs. D2 Northern Mandarin) for the dimensions of BEIJING and DY-

NAMISM, indicating the use of D2 variants by Xiamen Mandarin speakers can indicate not only orientation to place, but also stereotypical personality traits that are often associated with Northern speakers. There was also an interaction between listeners' intention to return to Xiamen and the scores for BEIJING, such that those who were more likely to continue their life away from home also perceived the linguistic changes in fellow Xiamen Mandarin speakers as sharing this orientation. For /w/->[ʊ], there was also the expected effect for LIKABILITY. In the next Chapter, I will synthesize the findings from both the production and the social perception study, and discuss their implications for the existing literature.

	BEIJING	**LIKABILITY**	**EDUCATED-NESS**	**DYNAMISM**
general	guise, variable, XIAMEN-STATUS, XIAMEN-RETRUN, guise:variable, guise:XIAMEN-RETURN	XIAMEN-STATUS, NORTH, guise:variable	guise: XIAMEN-STATUS, XIAMEN-PLEASANT, trial	guise, variable
/ʂ/	XIAMEN-STATUS, NORTH, XIAMEN-RETURN	XIAMEN-PLEASANT, XIAMEN-STATUS, NORTH	n/a	guise
neutral tone	n.s.	NORTH	n/a	NORTH
/w/->[ʊ]	guise, XIAMEN-STATUS, XIAMEN-RETURN	guise, XIAMEN-STATUS, NORTH	n/a	gender

Table 6.9: Summary of significant effects for the social perception study

Chapter 7

Discussion and Conclusion

7.1 Summary of main findings

In this dissertation, I examined how mobile speakers' use of D2 and their social evaluation of their D2 interact with their place-based identities. Specifically, the study focuses on Mandarin speakers from Xiamen, a city in Southern China, who were attending college in Beijing, where Northern Mandarin is the dominant Mandarin variety on campus. To this aim, I conducted a production study that investigated the mobile Xiamen speakers' stylistic shift between their D1, Xiamen Mandarin, and their D2, Northern Mandarin, and a social perception study which examined how listeners from the same community evaluate the use of selected features D2 by Xiamen talkers. Both studies focused on three linguistic features that differentiate the two Mandarin varieties: the /s/-/ʂ/ contrast, neutral tone, and /w/->[ʊ].

In the production study, two types of tasks were designed to foreground the North-South distinction. In the friend-with-friend conversation task, the focal Xiamen participants engaged in dyadic conversation with friends from different regional background (Northern vs. Xiamen), followed by a wordlist reading task with the friend present. In another task, the Xiamen participants read two passages that differed in the place-based topic: one was about Xiamen, and the other one about Beijing. In the reading task, the audience was the researcher, a fellow female Xiamen Mandarin speaker. Control data from Northern Mandarin speakers of similar age was also collected to establish the baseline for the stylistic comparison.

A significant effect of audience was observed for the /s/-/ʂ/ contrast and neutral tone. For /ʂ/ and neutral tone, the effect was in an expected direction: the mobile Xiamen participants had more back /ʂ/ production and used more neutral tone, both of which resembled the pattern in Northern Mandarin, in the presence of Northern audience as opposed to Xiamen audience. For /s/, there was a significant effect in the unexpected direction such that Xiamen participants had more back, i.e. less Northern Mandarin-like production, when talking their Northern friend compared to when they talked to their Xiamen friend. No audience effect was found for /w/->[ʊ], although the trend was in the expected direction.

In the conversation and wordlist tasks, for /ʂ/ and neutral tone, there was also a significant effect for Beijing orientation score, a measure that evaluates the mobile speakers' impression of Beijing. Those who oriented more positively towards Beijing were more likely to show the Northern Mandarin-like pattern. For /ʂ/, this attitudinal effect also interacted with the main effect of audience, such that the less Beijing-oriented speakers exhibited a greater difference between the Northern friend and Xiamen friend compared to the more Beijing-oriented speakers. A closer examination of the effect showed that it was mostly driven by how they were much more Xiamen Mandarin-like when interacting with the Xiamen friend compared to the other speakers.

In the passage reading task that foregrounded "place" in the form of topic, the effect was more limited. Only /ʂ/ showed a expected trend in which speakers were more Northern Mandarin-like when reading the Beijing passage, but the effect only approaches significance ($p = 0.05077$). /s/ and neutral tone showed similar effects in the expected direction, but they were not significant. There was a significant topic /w/->[ʊ] in an unexpected direction: the Beijing passage elicited more Xiamen Mandarin-like pattern than the Xiamen passage.

For conversation and wordlist, the wordlist data elicited consistently more Northern Mandarin-like production in comparison to conversation. This finding conforms with the well-attested predictions of the "attention to speech" model, which states that a more formal

style would lead to more attention paid to speech, resulting in a decrease of the vernacular variants (Labov, 1972). However, the reading passage, which in theory would fall between conversation and wordlist in terms of formality, did not show the expected stylistic effect. For neutral tone and /w/->[ʊ], the reading passage elicited the least Northern Mandarin-like production, whereas for /s/, it elicited the frontest, and thus more Northern Mandarin-like production of the three tasks.

In the social perception study, an online survey was conducted among 104 Xiamen college students in Beijing as well as recent Xiamen graduates from Beijing colleges in order to understand how Northern Mandarin features were perceived when used by D2 Xiamen speakers. A between-subject design of the matched-guise technique was used to compare the ratings given to Xiamen Mandarin guises and D2 Northern Mandarin guises performed by six female Xiamen talkers who had been to Beijing colleges. Each guise was rated for twelve personality traits, which were reduced into four dimensions in post-hoc analysis: BEIJING, LIIKABILITY, STATUS, and DIMENSION. Regression analyses were then conducted to see how the effect of guise, as well as listener traits, including their language attitudes towards Northern Mandarin and Xiamen Mandarin, correlated with the ratings.

For the dimension of BEIJING, which represented how willing the talker was to establish ties with Northern friends and pursue professional developments in Beijing, there was an expected significant effect of guise. The D2 Northern Mandarin guises received higher ratings for BEIJING compared to the Xiamen Mandarin guise across all variables. However, when the effect was examined for each linguistic feature individually, it only held for /w/->[ʊ]. For /ʂ/ and neutral tone, the effects were in the expected direction, but did not test significant. The mean difference between the two guises was also the greatest for /w/->[ʊ] of the three variables. XIAMEN-RETURN, the trait that captures the listeners' willingness to go back to Xiamen, was a significant predictor for BEIJING and interacted with the effect of guise. A closer examination of the interaction revealed that the main effect was likely

driven by the D2 Northern guise: listeners who gave lower scores for XIAMEN-RETURN tended to give higher ratings for the D2 Northern guise for the trait of BEIJING.

For LIKABILITY, which captured personality traits like "warm", "likable", "tend to *sajiao*", and "energetic", only a significant effect was found for /w/->[ʊ]. The direction was as predicted: the D2 guise received lower rating on this dimension.

No significant effect of guise was observed for STATUS, which represented the perceived educatedness of the talker. This lack of effect might be an artifact of the semantic bias of three reading passages, all of which revolved around campus life. Although all passages were written from third-person perspectives, and were stylistically read speech, the fact the talkers were discussing the life of college students might have lead to the impression that they, too, were fellow students, who would naturally be considered as educated.

Lastly, DYNAMISM, a dimension that represented personality traits like "talkative" and "energetic", showed main effects for guise and variable. Across the three variables, the D2 Northern guise received higher ratings for DYNAMISM, which echoes the metalinguistic commentary in the production study: Northerners were described as stereotypically blunt and outgoing. However, when the effect was examined for the individual linguistic features, the factor tested significant for /ʂ/, and the other two variables showed trends in the expected direction.

In the following sections, I will first discuss some characteristics of stylistic shift in second dialect use that are revealed in the results of the current study 7.2. I will then focus on how attitudinal factors influence the acquisition of D2 as well as accommodation to D2 (Section 7.3). In Section 7.4, I talk about how the examination of second dialect speakers can contribute to the language and place research. Lastly, I summarize the theoretical contributions of this dissertation and propose some future directions.

7.2 Style-shifting in Second Dialect Acquisition

In this dissertation, I examined two kinds of stylistic variation in order to investigate how speakers shift their place-based identities with the use of their D1 and D2: the shift in the presence of audience from different regional background, as well as the shift when talking about different place-based topics. Regarding the effect of audience, as discussed, for /ʂ/, we found expected effect of audience, such that Xiamen speakers had backer and thus more Northern Mandarin-like production when talking to their Northern friends compared to when conversing with their Xiamen peers. In other words, there was evidence of phonetic convergence (Giles, 1973), where speakers' phonetic production aligns with that of their interlocutor. However, for /s/, what we observed is what seemed to be divergence: Xiamen speakers also produced backer /s/ when talking to their Northern Mandarin friends despite the fact that Northern Mandarin has fronter /s/ than Xiamen Mandarin. According to Communication Accommodation Theory (Giles, 1973), which argues that accommodative behaviors are a function of speakers' effort to manage social distance with their interlocutors, phonetic divergence is said to be driven by a desire to distance themselves from their interlocutors. In this case, the interpretation would then be that the Xiamen focally participants were distancing themselves from their Northern friends with their use of backed /s/.

However, this account for the motivation of the observed /s/ production is incompatible with other patterns we see in the present study. To begin with, if the backed /s/ production were indeed a form of intended phonetic divergence, we would expect that it occurred for /ʂ/ as well, because in Xiamen Mandarin the two phonemes have very similar, if not overlapped acoustic targets. In other words, if a speaker were able to back their /s/, it would not be acoustically challenging for them to produce fronted /ʂ/. Furthermore, there is much evidence that /ʂ/ is closely associated with the North-South divide from both the production and social perception studies. In production, the backing of /ʂ/ correlates positively with

speakers' Beijing orientation, and in social perception, more Northern Mandarin-like /ʂ/ is perceived as more Beijing-oriented. In this case, if a Xiamen speaker were to display their strong Xiamen orientation, or anti-Beijing attitudes through language use, /ʂ/ would be an ideal candidate. Therefore, I argue that it is unlikely that the seemingly divergent /s/ production resulted from a desire to increase social distance.

I propose, instead, that the backing of /s/ is in fact a form of hypercorrection from /s/ to /ʂ/. The retroflexion of denti-alveolar sibilants /ts/, /tsʰ/ in Taiwan Mandarin has been documented in Chung's (2006) work, in which the different social status of the two phonemes in the /s/-/ʂ/ merger was discussed. Compared to the denti-alveolar sibilants, the retroflex sibilants enjoyed greater prestige, as evidenced in the increase of the retroflexed forms in more formal situations. Intriguingly, despite the resulting inconsistency with the prescribed norms, speakers were observed exhibiting most retroflexing of denti-aveolar sibilants in reading minimal pairs, less in phrase and passage reading, and the least in casual. Although Xiamen Mandarin speakers are different from their counterparts in Taiwan in that they likely had greater exposure to the norm in *Putonghua* via media and training at school, there are also signs that the retroflex variants are prestigious in Xiamen. When discussing the pronunciation of sibilants in Xiamen, participants often talk about how Xiamen speakers often do not have a distinction between /s/ and /ʂ/. At times when they gave details about the direction of the merger, it was always phrased as the lack of retroflex sounds instead of the other way around. In fact, I have not encountered any speaker who discussed the pronunciation of denti-alveolar by itself, as opposed to it being a part of the merger. This type of hypercorrection or overgeneralization has been documented in other works on second dialect learners as well (Siegel, 2010; Trudgill, 1986), particularly in cases where speakers of a stigmatized variety are learning a more prestigious variety.

Given this sociolinguistic environment, one possible interpretation of the backer production of /s/ is that the speakers were converging to a norm that they believed to be a part of Northern Mandarin. Similar effects have been documented in Thakerar, Giles and Cheshire

(1982) work, which led them to propose a distinction between "objective convergence" and "subjective convergence": the former is used for cases in which speakers converge to the linguistic production of their interlocutors, whereas the latter is to describe the convergence what speakers believed to be, but not actually were, characteristics of the interlocutors.

The discussion on the /s/ pattern has shown that in order to interpret the motivation for observed D2 use, we might need to know the answers to the following questions. How much explicit and implicit knowledge D2 speakers have regarding the linguistic conditioning of the variable of interest? Do they share the same social evaluation of the linguistic variation in D2 with the native speakers? For example, a potential follow-up study to tease apart the divergence and the subjective convergence accounts would be to conduct a social perception study that ask the mobile Xiamen speakers to rate the hypercorrected form in terms of standardness or prestige. If the hypercorrected /s/ were rated as high as a regular /ʂ/, then we would have the confirmation that the Xiamen speakers were likely converging to their interlocutors with a backed /s/.

In contrast to the effect of audience, place-based topic showed a much weaker effect: for the /s/-/ʂ/ contrast and neutral tone, the trends were in an expected direction, but all of them failed to reach statistical significance; for /w/->[ʊ], there was a significant effect in the unexpected direction. This lack of topic effect could result from the nature of this particular type of style-shift, as well as the methodological design of the current study. In the SDA literature, the significant effect of topic was found significant in the two studies that were designed to examine this phenomenon (Love & Walker, 2013; Walker, 2014). Nonetheless, in both cases, the effect size was generally small. Therefore, it could be the case that the topic effect was simply too subtle to achieve statistical significance for the current study, particularly since there was much less data available for the analysis of place-based topic compared to the audience effect.

Another possible explanation lies in the particular task I used to elicit this effect. Recall

that the data for the examination of the topic effect was reading passages. In order to enable quantitative analysis, each passage contained at least 15 tokens of the four variables of interest [1]. This particular design generated passages that were quite long: the Xiamen passage contained 514 Chinese characters, and the Beijing passage contained 519. On average, it took a participant around 4 minutes to finish reading the two passages. Additionally, in order to focus on the same topic consistent throughout each passage, the materials were framed as introductions to the two places, with a focus on the tourism resources. Although no participant reported having any issue recognizing the characters used in the passage, the slightly formal genre of writing may have negatively affected the fluency of the read speech. During transcription, I kept track of the times in which the participants' production differed from the script [2]. Of the 31 participants, only one speaker read the passage in the exact same way as scripted. On average, each participant made 6 to 7 speech errors across the two passages, including false start, lexical substitution, and anticipation errors, most of which seemed unintentional [3]. Although speech errors were also present in wordlist reading, the error rate was much lower, and most errors were false starts. This pattern coincides with the fact that for neutral tone and /w/->[ʊ], the reading passage data featured the greatest amount of Xiamen Mandarin-like productions, which contradicts the prediction of the Labovian "attention to speech" paradigm. Although no psycholinguistic measures were taken to evaluate speech processing in this study, it is possible that the pressure to comprehend the content of the passage [4] as one read might have resulted in greater cognitive load. Sharma's (2018) recent work on how attentional load affects the behavior of a fluent bidialectal speaker proposed that in moments of heavy attentional load, there might be a tendency for even a speaker who otherwise shown strong audience-design effect to default

[1] There were 15 multisyllabic words containing /s/, and another 15 words containing /ʂ/.

[2] When the inconsistency occurred on tokens that represented the linguistic variables of interest, they were excluded from the analysis.

[3] The conclusion was based on the observation that none of the errors were read with emphatic prosody, or accompanied by explicit commentary.

[4] Although the participants were instructed to comprehend the passage, certain level of comprehension would be necessary in order to make reasonable prosodic boundaries.

to their *style dominance*, namely, their first-acquired style. For participants in the current study, the *style dominance* would be Xiamen Mandarin, which might have been affected by the potential increase in the attentional load. Regardless of the extent to which the account of attentional load applies to the current study, the more restricted use of D2-like production in the reading passage would result in less room for the topic effect to emerge.

7.3 Attitude and Second Dialect Use

As discussed in Section 1.1.3, mobile speakers' connection to their D1-speaking community as well as their orientation towards the D2-speaking community can play an important role on the use of their D2 (Andersson & Thelander, 1994; Carmichael, 2017; Drummond, 2012; Foreman, 2003; Ivars, 1994; Kerswill, 1994; Sharma, 2005; Walker, 2014). However, the extent to which such attitudinal factors influence D2 use can differ across different linguistic variables and across different population.

For example, Walker (2014) found that among her American subjects living in the U.K., those that had more positive attitudes towards life in the U.K. were more likely to have less rhotic, more British English-like production in a reading task. However, a similar kind of attitudinal effect did not occur for English expatriates living in the U.S. for rhoticity. This asymmetry in the effect of attitude could in part result from the difference in the relative prestige of the two linguistic varieties in the respective D2 communities: British English has more prestige in the U.S. than American English has prestige in the U.K. This asymmetry in prestige is supported by speaker commentary from both the American and English subjects. In addition, such attitudinal effect was also not found in two of the variables examined in the study that distinguished the two English varieties: BATH and intervocalic /t/.

Similarly, in the present study, we see that the effect of Beijing orientation, a measure of speakers' orientation towards Beijing, was present for /ʂ/ and neutral tone, but not for /s/ or /w/->[ʊ]. Comparing the two groups of variables, we also see a difference in explicit

knowledge and prestige. Unlike /w/->[ʊ], the /s/-/ʂ/ contrast and neutral tone are codified in *Pinyin*, the official phonetically-based orthography in the mainland. For Xiamen speakers, who likely grew up with limited personal contact with Northern Mandarin speakers, whose speech serves as the base for *Putonghua*, *Pinyin* is a critical source for both learning about the prescribed linguistic rules and thus the basis for the distinction between the prestigious and the stigmatized forms. In my previous work on non-mobile Xiamen speakers (Y. Lin, 2018), I also showed that the implementation of a *Pinyin*-focused curriculum played an important role in the reversal of the /s/-/ʂ/ merger and the /ɻ/-/l/ merger for younger speakers. Since the variation of /w/->[ʊ] is not codified in *Pinyin*, it is unlikely that Xiamen speakers would obtain explicit knowledge of it from formal education. The lack of formal introduction of the variable could also result in less perceived prestige. In addition, in Mandarin, there are widely recognized labels for the denti-alveolar vs. retroflex sounds (*ping.qiao.she* 平翘舌) and neutral tone (*qing.sheng* 轻声), there is no equivalent for /w/->[ʊ], which could be indirect evidence that there has not been as much scholarly and/or folk interest in this variation. Within the /s/-/ʂ/ contrast, as discussed in Section 7.2, the retroflex sibilant has much higher prestige than the denti-alveolar one to the extent that speakers exhibit hypercorrection of the latter to the former.

The importance of prestige can also be observed in other parts of the study. In the production study, the Northern Mandarin-exclusive variants were rarely observed. For /ʂ/, the lenited /ɹ/ was rarely found, and most of the tokens were produced by the same two speakers. For neutral tone, there was a significant effect of lexical condition across all tasks. In conversation and wordlist combined, while 19.88% of the words in the *Putonghua* lexical condition were produced with a neutral tone, only 6.4% of those in the Northern Mandarin-exclusive lexical condition were produced with a neutral tone. This pattern is not very surprising if we take into consideration the fact that the population of this study is college students from prestigious universities. Since memorizing the pronunciation of Chinese characters in *Pinyin* notation is a part of the required curriculum in secondary

education, these academically competitive students likely had been exposed to, if not heavily trained on, the prescribed standard of *Putonghua*.

Taken together, I argue that the production of D2 variables that are associated with prestige would be more likely to be influenced by attitudes towards D1- and/or D2-speaking communities than those that are less recognized.

In addition to the attitudinal effect on D2 use, this study also examined the interaction between Beijing orientation and the audience effect. The findings contribute to the current debate in the field of sociophonetics and sociolinguistic cognition regarding the role of social and attitudinal factors on speech accommodation. Some laboratory studies have found that speakers imitated talkers when there was not social incentive to do so, and concluded that the accommodative behaviors result from an automatic perception-production link (Goldinger, 1998; Pickering & Garrod, 2004). On the other hand, the communication accommodation theory (Giles, 1973; Giles & Powesland, 1975) suggests that convergence or divergence occurs as a function of speakers' desire to decrease or increase the social distance with their interlocutors. In this case, attitudinal factors would motivate accommodation. Several recent work suggests that while convergence might be automatic, the degree of the effect can be mediated by attitudinal factors (Alan, Abrego-Collier, & Sonderegger, 2013; Babel, 2010; Balcetis & Dale, 2005; Weatherholtz et al., 2014). For example, Babel (2010) found that New Zealand speakers who showed a pro-Australia bias in an Implicit Association Task were more likely to accommodate to the vowels of an Australian talker. However, it is worth noting that the manipulation of liking, carried out in a form of being flattered or insulted, did not influence degree of accommodation.

In the current study, phonetic convergence was observed for /ʂ/ and neutral tone. However, there was only a significant interaction between Beijing orientation and convergence for /ʂ/: the less Beijing-oriented speakers were more likely to use Xiamen Mandarin-like production when talking to their Xiamen friend compared to when talking to their Northern

friend, while more Beijing-oriented speakers showed less audience effect. This finding lends support to the view that social factors do play a role in the accommodative process. It also poses a question with regard to why there was no attitudinal effect of convergence for neutral tone. One possibility lies in the fact that the lexically-conditioned nature of neutral tone have limited the amount of D2 use in general, and thus room for the attitudinal factor to influence accommodation. After all, the effect size was relatively small for accommodation in neutral tone: on average 15.98% of the target words were realized as neutral tone with a Northern audience, whereas 11.16% of the words had neutral tone realization with a Xiamen audience.

Another explanation would be that neutral tone does not have as strong association to the North-South divide as /ʂ/ for the mobile Xiamen speakers. As part of the post-task ethnographic interview (See Section 4.1.4), I asked my participants (N=31) to name the linguistic features that differentiate Xiamen and Northern Mandarin. The results are summarized in Table 7.1. The first two columns show the linguistic features mentioned and their respective counts. The third column indicates whether this feature was mentioned in Lin (2018), where I asked non-mobile Xiamen speakers to name distinct characteristics of Xiamen Mandarin. The deretroflexion of sibilants is the second most commonly mentioned distinction between the two varieties. The social salience of this feature is consistent with what I found among speakers residing in Xiamen (Y. Lin, 2018). Neutral tone was not listed as an independent feature, but six speakers did mention the intonational differences between Xiamen and Northern Mandarin. They reported that Northern Mandarin sounded more dynamic, whereas Xiamen Mandarin was more monotonous. Several potential reasons may be responsible for this percept. First, previous finding suggests that Xiamen Mandarin has narrower F0 range than *Putonghua* (A. Li et al., 2006). Second, the abundance of neutral tone or weak stress in Northern Mandarin can result in more variation in stress compared to Xiamen Mandarin, creating a more variable rhythmic pattern. In brief, the fact that more Xiamen speakers commented on the sibilant variable than the intonational variation

Linguistic Features	Count	Lin (2018)
Rhotacization	15	Yes
Deretroflexion of sibilants	10	Yes
Intonation	6	No
Vocabulary	6	No
Sentence final particles *wo, ei*	4	Yes
Initial /n/, /ɻ/ -> /l/	4	Yes
Merger of syllable-final nasals	3	Yes
/w/->[ʊ]	1	No

Table 7.1: Features that differentiate Xiamen and Northern Mandarin listed by relocated Xiamen speakers in Beijing (N=31)

indicates that the former likely has stronger association with the North-South divide.

To conclude, by comparing the differences between /ʂ/ and neutral tone, I propose that two factors can influence how attitudinal factors mediate speech accommodation: the overall effect size of accommodation and the social meaning of the linguistic variable. Attitudes are more likely to modulate accommodative behaviors for variables that have strong associations with the interlocutors and variables that have a stronger overall effect size.

7.4 Language and place-based identity for Second Dialect Speakers

Lastly, I would like to address the relationship between language and place-based identities for the mobile Xiamen speakers, which the present study revealed. A major effect that speaks to the nuanced place-based identities is the significant interaction between audience and Beijing orientation for /ʂ/. Importantly, in this case, the direction of the effect was such that in the presence of a Northern audience, the effect of Beijing orientation was not very strong. This overall effect echoes the fact that almost half of the participants reported having experienced dialect shifts towards Northern Mandarin since coming to Beijing. Nonetheless, when interacting with a Xiamen audience, those who had negative impressions of Beijing

had the most Xiamen Mandarin-like production, whereas those who orientated positively to Beijing exhibited less audience effect. This pattern shows that for the mobile Xiamen speakers, the most critical ground for them to construct their place-based identities through language use lay not so much in how they interacted with their Northern friends, but in how much Xiamen Mandarin they maintained when facing people who had some knowledge of their linguistic and social past. In what follows, I first present the analysis of the makeup of mobile Xiamen speakers' circle of friends to illustrate how they value their connections to Xiamen. Then, I discuss two examples from the less Beijing-oriented speakers in order to illustrate how the foregrounding of "Xiamen" affects their style-shift between Xiamen and Northern Mandarin.

At the end of every ethnographic interview, I asked the focal Xiamen participants to do a task that was designed to understand the makeup of their circle of friends. The participants were first asked to list 10 of their best friends. After completing the listing, they were then asked to provide the places of origin for these friends. The places of origin were grouped into three categories: Xiamen, Northern China, and elsewhere. On average, out of the 10 friends, six of were from Xiamen. The number of Xiamen friends for each participant did not correlate with their Beijing orientation or their school year. Several speakers who orient positively to Beijing listed eight to nine friends from Xiamen; several senior speakers, who had been in Beijing for three years, also listed more than seven Xiamen friends. Despite the fact that many focal Xiamen participants were not able to engage in face-to-face interactions with their Xiamen friends since college, they still maintained a relationship with them. This community-wide pattern indicates that the relationship between their Xiamen friends is much valued in general.

In the ethnographic interview, in addition to audience-based shifts, several participants also commented on the fact they when they went back to Xiamen, they also shifted back to their Xiamen accent. The most vivid story of this kind came from Ruth, who was very assertive about not wanting to sound like Northerners in Beijing. However, she recalled

that one time, when she caught a taxi at the airport in Xiamen after flying back from Beijing, she had a slip of the tongue and addressed the taxi driver as *shī.fu* "master", with a clear neutral tone and the retroflex /ʂ/. The practice of addressing a taxi driver as *shī.fu* "master" is the norm in Beijing, but is hardly seen in Xiamen. In addition, her particular performance featured two of the well-known Northern Mandarin variants examined in this work. That moment, as she recalled, she felt as if "her precious Taiwanese accent has been tainted". This instance provides further evidence that for the mobile speakers, at least ones that were less Beijing oriented, how much they could "guard against" the Northern Mandarin influence when they were back home was an important part of their identity as a geographically mobile speaker.

The last piece of evidence that illustrates how mobile Xiamen speakers style-shift when "Xiamen" is foregrounded comes from Julia's conversation with her Northern friend. Like Ruth, Julia also expressed a clear stance of wanting to maintain her vernacular accent in Beijing. However, as the leader of two student clubs, she also told me in the interview that she did tend to use a more standard accent when required by the occasion, for example, when reaching out to contestants of a match that her organization hosted. During the ethnographic interview, she also struck me as a speaker who consistently produced fronter tokens for /ʂ/.

Despite my impression and her claim to not accommodate to Northern Mandarin in general, her conversation with the Northern friend actually featured a decent amount of Northern Mandarin features. In fact, she was one of the only two mobile Xiamen speakers who had frequent use of the lenited [ɹ], as shown in the first and the third line in Quote 11. I also heard her using [ʊ] for /w/ multiple times, as in line 2. However, as she shifted to talk about how German and Southern Min, the regionalect in Xiamen, were similar starting at line 5, she showed perceptible fronting of retroflex sibilants for the next few lines. In the last line, her pronunciation of *shuo* "speak", was more like a dental sound. Given the particular context of this shift, it is clear that talking about Southern Min triggered this

rather radical shift to more Xiamen Mandarin-like production. It is also worth noting that the fact that she was able to bring up her Southern Min knowledge while in Beijing, a place where Southern Min is not widely spoken, is also an indication that maintaining the connection to Xiamen is an important of being a geographically mobile speaker.

When we take into account Julia's extensive use of Northern Mandarin with her Northern friend, and the extent to which she was able to shift back to even a more vernacular version of Xiamen Mandarin when her place-based identity was foregrounded via the topic of regional linguistic variety, we might want to contextualize her overt comments about maintaining her accent in Beijing. That is, as opposed to completely shielding any Northern Mandarin influence, it is important to be able to use Xiamen Mandarin when place-based identities are foregrounded.

(11) (1) *Qishi* [tɕʰi.ɹi] *wo meiyou tebie xihuan deyu, ni zhidao ma.*
Actually, I don't like German too much, you know.

(2) *Yinwei* [jin.ʋei] *wo benshen jiang meiyu.*
Because I speak American English myself.

(3) *Jiushi* [tɕjou.ɹi] *jiang meiyu de hua, deyu de hua ganjue fayin hen zhong.*
If you speak American English, you will find the pronunciation of German very heavy.

(4) *Dan haihao jiushi you yidian de hua jiu deyu gen women minnanhua hen*
But there is one thing, that German and our Southern Min regionalect are both

(5) *Doushi* [dou.ʃi] *women minnanhua shuohua ye hen zhong* [tsuŋ]
Our Southern Min regionalect is also very heavy

(6) *Ranhou deyu ta fayin ye hen zhong* [tsuŋ], *suoyi jiu haihao.*
The pronunciation of German is very heavy, too. So it's okay.

(7) *Ta de sheyou* [ʃɤ.jou], *ta shuo ta de daxue sheyou* [ʃɤ.jou], *xuefa yude*
He said that, his roommate, his roommate from college, majored in French

(8) *Tingle zhengge* [ts̲əŋ.kɤ] *daxue sinian*

He listened to him for the entire four years of college

(9) *Dou mei juede ta shuo* [s̲wo] *de fayu you duo haoting.*

But did not find the French he spoke any pleasant.

(An excerpt from the Northern friend conversation featured Julia, female, sophomore)

(**Boldface** indicates Northern Mandarin-like pronunciation, and underline indicates Xiamen Mandarin-like pronunciation)

The results of the social perception study also helped us to see how the use of Northern Mandarin was received in the same community of mobile Xiamen speakers. At one level, the incorporation of Northern Mandarin features can indicate how likely a mobile Xiamen speaker is to identify with the Northern community. The co-occurrence of Beijing/Northern-oriented effects in both the production and the social perception studies speaks to the strength of the relationship between language and place in this community. Furthermore, the effect that in social perception the rating for BEIJING interacts with listeners' intention to return to Xiamen reflects an ideology that connects linguistic mobility to social mobility.

Additionally, the D2 Northern Mandarin guise also increased the ratings for DYNAMSIM. In a broader sense, this effect echoes the common stereotype that Northerns were more outgoing and blunt compared to Southerners. Therefore, adopting Northern Mandarin features can increase the perceived expressiveness on the part of the mobile Xiamen speakers. At a more local level, since the D2 variant was presented in Xiamen Mandarin-sounding voices, the comparison between the D1 and D2 guises could also be interpreted as the social meaning of acquiring a D2. Since the acquisition of Northern Mandarin often occurs through the interaction with fellow Northern college students, greater D2 use could also be linked to the popular local persona of someone who actively engages in social activities.

7.5 Conclusion and future directions

This dissertation addresses critical issues in the field of second dialect (D2) studies, and language and place research through the examination of stylistic variation and social perception of geographically mobile speakers in the same community. Specifically, I focused on Mandarin speakers from Xiamen, a city in Southern China, who moved to Beijing for a college education. The study focused on three linguistic features that differentiated Northern and Xiamen Mandarin: the /s/-/ʂ/ contrast, neutral tone, and /w/->[ʊ].

The findings of the production study contribute to the two strands of literature in several ways. First, it is one of the first few large-scale studies (Walker, 2014) that have examined the stylistic variation for geographically mobile speakers. I have found the effect of audience design for /ʂ/ and neutral tone, such that speakers used more D2 when talking to native speakers of D2 and used more D1 when talking to fellow D1 speakers. This finding shows that even for adult D2 learners, their linguistic production is not fossilized, but still exhibits robust style-shift. Therefore, in future studies of second dialect acquisition, it is important to take into account the linguistic background of the researcher when describing the linguistic and extra-linguistic factors that influence D2 variation.

Second, the production study also found that Beijing orientation score, a measure of speakers' impression of Beijing, affects the D2 use of /ʂ/ and neutral tone as well as the audience effect in /ʂ/. A comparison between /ʂ/ and neutral tone, and the other variables that were not influenced by attitude showed that explicit knowledge of the variable and its prestige can important for attitude to influence D2 production. A comparison between /ʂ/ and neutral tone indicated that, for accommodation, variables that had greater overall effect size and had stronger relevant social meaning were more likely to be mediated by attitudinal factors.

Lastly, this dissertation contributes to the research in language and place by the examining the linguistic construction of place-based identity by geographically mobile speakers.

While much of the language and place research has focused on non-mobile population (See (Carmichael, 2017) for an exception), the present study shows that mobile speakers can also exhibit expected style-shift when "place" is foregrounded with the having interlocutors from different regional background. Since mobile speakers often need to negotiate their place-based identities between the D1- and D2-speaking communities, linguistic shift can become an important means to signal their place-based identities. For example, the two individual cases discussed in Section 7.4 showed that when the mobile speakers traveled back home or when they discussed D1-community related issues, D1 became the preferred linguistic variety. The interaction between Beijing orientation and audience for /ʂ/ also showed that for the the mobile Xiamen speakers, the critical ground for negotiating their place-based identity in Beijing lies in their interaction with their Xiamen, but not Northern friends. Taken together, the findings suggest that factors that can influence mobile speakers' style-shift include their orientation towards the D2-community, the physical location, and sometimes even the topic of conversation as in Quote 11. In brief, this dissertation has shown that geographically mobile speakers are an excellent population for understanding the mutually influential relationship between language and place: relocation exposes speakers to novel linguistic and sociolinguistic norms, and they then make use of their expanded linguistic repertoire to position themselves in the D1- and D2-speaking communities. The field could benefit from more work on geographically mobile speakers.

Another advantage of this dissertation lies in the fact that it examines the production as well as the social evaluation of D2 in the same community in tandem. The results of the two studies showed a congruence in the relationship between place-based identities and D2 use: the more Beijing-oriented speakers used more D2 features (/ʂ/ and neutral tone), and those who used more D2 features were perceived as more likely to form connections with the Northern Mandarin-speaking community (/ʂ/, neutral tone and /w/->[ʊ]). In addition to confirming social meaning that has been revealed in the production study, the social

perception study can explore the potential social meanings of linguistic use that are not directly available from speakers' linguistic commentary. For example, the examination of dynamism-related traits was motivated by popular stereotypes of Northerners. However, when the mobile speakers shared their impression of Northerners, they did not link the expressiveness of Northerners explicitly to the use of Northern Mandarin. It is likely that the use of Northern Mandarin feature indirectly indexes (Ochs, 1992) dynamism as Northern speakers are known to be more expressive. In Silverstein's (2003) term, Beijing or Northern would be the first order indexicality of D2 use of Northern Mandarin, whereas the social meaning of dynamism has the second order indexicality. In short, including a social perception component allows us to understand the social meanings of D2 use beyond the level of geographical indices, and thus broadens our perspectives in the analysis of D2 production.

Furthermore, a comparison between the production and social perception patterns for each variable also revealed an asymmetry for /w/->[ʊ]: while this variable did not show expected stylistic variation and was not influenced by Beijing orientation, it was shown to be associated with several social meanings in perception (BEIJING, LIKABILITY, and DYNAMISM). Several explanations could be made for this asymmetry. One is that Xiamen speakers simply failed to perceive a difference between [w] and [ʊ], making it difficult for them to acquire it in the first place. Although /w/->[ʊ] did pattern with the other two variables for BEIJING and DYNAMISM, which would indicate that the mobile Xiamen listeners were able to perceive some "Northern flavor" in the [ʊ] guise, it remains a question where they were able to pinpoint the linguistic feature that resulted in such percept. Another possibility is that the mobile Xiamen speakers rejected the use of this feature, perhaps as a result of the negative social meaning associated with it. As discussed in Section 7.2, this variable is not credited with as much prestige as /ʂ/ and neutral tone. Furthermore, the [ʊ] guise was rated significantly lower on the LIKABILITY dimension. Further research is needed in order to tease apart the two possible explanations. We need to figure out whether 1) the mobile speakers could indeed distinguish between the two variants, and 2) what social

meaning of this variation resulted in the lower LIKABILITY rating (e.g. less prestigious and/or overly Northern).

Regardless of what factors can account for this asymmetry, this finding speaks to the importance of including a perceptual aspect in the investigation of language and place. In many current studies of language and place (Johnstone & Kiesling, 2008; Modan, 2007), which strives to examine how the concept of "place" and place-based identities are constructed linguistically, the foci have been on place-related stylistic shift in speech production as well as the discursive construction of place-based identity. These approaches have been highly useful for the current study as well, as is shown in the results for /ʂ/ and neutral tone and the two case analyses in Section 7.4. However, for /w/->[ʊ], had we only focused on stylistic shift, we might conclude that it was not particularly important constructing place-based identity for the mobile Xiamen speakers based on the lack of expected effects. However, as I have argued above, this variable was attributed to place-related social meaning by listeners in the same community. This shared understanding of the social meaning for /w/->[ʊ] should also be considered as a critical component of mobile Xiamen speakers' place-based identities as well. This view echoes the tradition in sociolinguistic research that defines members of the same speech community by their shared social norms instead of their linguistic similarity (Gumperz, 1964). Therefore, it is my hope that future language and place research will explore the social perception of the linguistic variables of interest alongside the examination of discourse and speech production.

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Appendix A

Wordlist

The following table shows the wordlist used in the wordlist reading task followed the friend-with-friend conversation. The content in the variable column indicates the type of variables and some subcategories within the variable. NT indicates neutral tone, and (g), (r) and (i) indicate the three subcategories for neutral tone: grammatical, reduplicative and irregular. PTH indicates that the word is labeled as neutral tone in Contemporary Chinese Dictionary (*Xiandai hanyu cidian [Contemporary Chinese Dictionary]*, 2012), and NORTH indicates that the word is only marked as neutral tone in Lu' s (1995) Beijing Mandarin list but not in the dictionary. /ʂ/ indicates /ʂ/-initial words and /s/ indicates /s/-initial words, and the vowels in the parentheses indicate the following vowels. fillers and /w/ → /ʊ/ and are self-explanatory.

Table A.1: Wordlist

Word	**IPA**	**Variable**	**Word**	**IPA**	**Variable**
折腾	[ʈʂɤ.tʰəŋ]	NT (g) - PTH	姐夫	[tɕje.fu]	NT (g) - PTH
下巴	[ɕja.pa]	NT (g) - PTH	乡下	[ɕjɑŋ.ɕja]	NT (g) - PTH
在乎	[tsai.xu]	NT (g) - PTH	嘴巴	[tswei.pa]	NT (g) - PTH
鸽子	[kɤ.tsɻ]	NT (g) - PTH	懂得	[tuŋ.dɤ]	NT (g) - PTH
橘子	[tɕy.tsɻ]	NT (g) - PTH	他们	[tha.mən]	NT (g) - PTH
力气	[li.tɕhi]	NT (g) - PTH	厚道	[xou.tɑu]	NT (g) - PTH
行家	[xɑŋ.tɕja]	NT (g) - PTH	凉快	[ljɑŋ.khai]	NT (g) - PTH
记性	[tɕi.ɕiŋ]	NT (g) - PTH	哥哥	[kɤ.kɤ]	NT (r) - PTH

太太	[tʰai.tʰai]	NT (r) - PTH	姐姐	[tɕje.tɕje]	NT (r) - PTH
爷爷	[je.je]	NT (r) - PTH	婆婆	[phwo.phwo]	NT (r) - PTH
月亮	[ɥe.ljɑŋ]	NT (i) - PTH	麻烦	[ma.fan]	NT (i) - PTH
朋友	[pʰəŋ.jou]	NT (i) - PTH	樱桃	[jiŋ.thɑu]	NT (i) - PTH
窗户	[ʈʂʰwɑŋ.xu]	NT (i) - PTH	名字	[miŋ.tsɻ]	NT (i) - PTH
薄荷	[pwo.xɤ]	NT (i) - PTH	招牌	[tʂɑu.phai]	NT (i) - PTH
便宜	[pʰjɛn.ji]	NT (i) - PTH	宽敞	[kʰwan.ʈʂhɑŋ]	NT (i) - PTH
核桃	[xɤ.thɑu]	NT (i) - PTH	困难	[kʰwən.nan]	NT (i) - PTH
蘑菇	[mwo.ku]	NT (i) - PTH	欺负	[tɕʰi.fu]	NT (i) - PTH
抽屉	[ʈʂʰou.thi]	NT (i) - PTH			
长处	[ʈʂʰɑŋ. ʈʂhu]	NT (g) - NORTH	码头	[ma.tʰou]	NT (g) - NORTH
分量	[fən.ljɑŋ]	NT (g) - NORTH	体面	[tʰi.mjɛn]	NT (g) - NORTH
知道	[ʈʂɻ.tɑu]	NT (g) - NORTH	好处	[xɑu.ʈʂhu]	NT (g) - NORTH
妥当	[tʰwo.tɑŋ]	NT (g) - NORTH	缘分	[ɥɛn.fən]	NT (g) - NORTH
景气	[tɕiŋ.tɕʰi]	NT (g) - NORTH	柔和	[ɻou.xɤ]	NT (g) - NORTH
意见	[ji.tɕjɛn]	NT (g) - NORTH	较量	[tɕjɑu.ljɑŋ]	NT (g) - NORTH
戏弄	[ɕi.nuŋ]	NT (g) - NORTH	本钱	[bən.tɕʰjɛn]	NT (g) - NORTH
衡量	[xəŋ.ljɑŋ]	NT (g) - NORTH	爱惜	[ai.ɕi]	NT (i) - NORTH
报复	[pɑu.fu]	NT (i) - NORTH	抱怨	[pɑu.ɥɛn]	NT (i) - NORTH
本领	[pən.liŋ]	NT (i) - NORTH	布置	[pu.ʈʂɻ]	NT (i) - NORTH
沉着	[ʈʂʰən.ʈʂwo]	NT (i) - NORTH	刺激	[tsʰi.tɕi]	NT (i) - NORTH
聪明	[tsʰuŋ.miŋ]	NT (i) - NORTH	父亲	[fu.tɕʰin]	NT (i) - NORTH
富裕	[fu.jy]	NT (i) - NORTH	公平	[kuŋ.pʰiŋ]	NT (i) - NORTH
关系	[kwan.ɕi]	NT (i) - NORTH	合同	[xə.thuŋ]	NT (i) - NORTH
活泼	[xwo.phwo]	NT (i) - NORTH	机会	[tɕi.xwei]	NT (i) - NORTH
蜗牛	[wo.njou]	/w/ → /ʋ/	握拳	[wo.tɕʰɥɛn]	/w/ → /ʋ/

卧底	[wo.ti]	/w/ → /ʊ/	掌握	[ʈʂɑŋ.wo]	/w/ → /ʊ/
肥沃	[fei.wo]	/w/ → /ʊ/	酒窝	[tɕjou.wo]	/w/ → /ʊ/
侮辱	[wu.ɻu]	/w/ → /ʊ/	雾气	[wu.tɕhi]	/w/ → /ʊ/
无穷	[wu.tɕhjuŋ]	/w/ → /ʊ/	虚无	[ɕy.wu]	/w/ → /ʊ/
中午	[ʈʂuŋ.wu]	/w/ → /ʊ/	房屋	[fɑŋ.wu]	/w/ → /ʊ/
文件	[wən.tɕjɛn]	/w/ → /ʊ/	问题	[wən.thi]	/w/ → /ʊ/
温柔	[wən.ɻou]	/w/ → /ʊ/	新闻	[ɕin.wən]	/w/ → /ʊ/
论文	[lwən.wən]	/w/ → /ʊ/	提问	[thi.wən]	/w/ → /ʊ/
违反	[wei.fan]	/w/ → /ʊ/	微笑	[wei.ɕjɑu]	/w/ → /ʊ/
围巾	[wei.tɕin]	/w/ → /ʊ/	团委	[tʰwan.wei]	/w/ → /ʊ/
结尾	[tɕje.wei]	/w/ → /ʊ/	学位	[ɕɥe.wei]	/w/ → /ʊ/
玩具	[wan.tɕy]	/w/ → /ʊ/	万能	[wan.nəŋ]	/w/ → /ʊ/
晚霞	[wan.ɕja]	/w/ → /ʊ/	鱼丸	[jy.wan]	/w/ → /ʊ/
游玩	[jou.wan]	/w/ → /ʊ/	港湾	[kɑŋ.wan]	/w/ → /ʊ/
网球	[wɑŋ.tɕʰjou]	/w/ → /ʊ/	王者	[wɑŋ.ʈʂɤ]	/w/ → /ʊ/
汪洋	[wɑŋ.jɑŋ]	/w/ → /ʊ/	期望	[tɕʰi.wɑŋ]	/w/ → /ʊ/
帝王	[ti.wɑŋ]	/w/ → /ʊ/	健忘	[tɕjɛn.wɑŋ]	/w/ → /ʊ/
歪理	[wai.li]	/w/ → /ʊ/	外交	[wai.tɕjɑu]	/w/ → /ʊ/
歪曲	[wai.tɕʰy]	/w/ → /ʊ/	格外	[kɤ.wai]	/w/ → /ʊ/
意外	[ji.wai]	/w/ → /ʊ/	国外	[kwo.wai]	/w/ → /ʊ/
挖掘	[wa.tɕɥe]	/w/ → /ʊ/	瓦片	[wa.phjɛn]	/w/ → /ʊ/
瓦解	[wa.tɕje]	/w/ → /ʊ/	青蛙	[tɕhiŋ.wa]	/w/ → /ʊ/
低洼	[ti.wa]	/w/ → /ʊ/	短袜	[twan.wa]	/w/ → /ʊ/
使命	[ʂɻ.miŋ]	/ʂ/ (/i/)	适合	[ʂɻ.xɤ]	/ʂ/ (/i/)
世界	[ʂɻ.tɕje]	/ʂ/ (/i/)	实验	[ʂɻ.jɛn]	/ʂ/ (/i/)
事迹	[ʂɻ.tɕi]	/ʂ/ (/i/)	时间	[ʂɻ.tɕjɛn]	/ʂ/ (/i/)
消失	[ɕjɑu.ʂɻ]	/ʂ/ (/i/)	懂事	[tuŋ.ʂɻ]	/ʂ/ (/i/)

老师	[lɑu.ʂɻ]	/ʂ/ (/i/)	面试	[mjɛn.ʂɻ]	/ʂ/ (/i/)
六十	[ljou.ʂɻ]	/ʂ/ (/i/)	浴室	[jy.ʂɻ]	/ʂ/ (/i/)
鲨鱼	[ʂa.jy]	/ʂ/ (/a/)	刹车	[ʂa.tɕʰɤ]	/ʂ/ (/a/)
砂糖	[ʂa.tʰɑŋ]	/ʂ/ (/a/)	删除	[ʂan.tɕʰu]	/ʂ/ (/a/)
闪亮	[ʂan.ljɑŋ]	/ʂ/ (/a/)	擅自	[ʂan.tsi]	/ʂ/ (/a/)
大厦	[ta.ʂa]	/ʂ/ (/a/)	防晒	[fɑŋ.ʂai]	/ʂ/ (/a/)
衬衫	[tɕʰən.ʂan]	/ʂ/ (/a/)	友善	[jou.ʂan]	/ʂ/ (/a/)
登山	[təŋ.ʂan]	/ʂ/ (/a/)	书法	[ʂu.fa]	/ʂ/ (/u/)
暑假	[ʂu.tɕja]	/ʂ/ (/u/)	鼠标	[ʂu.pjɑu]	/ʂ/ (/u/)
数据	[ʂu.tɕy]	/ʂ/ (/u/)	属性	[ʂu.ɕiŋ]	/ʂ/ (/u/)
树荫	[ʂu.jin]	/ʂ/ (/u/)	特殊	[tʰɤ.ʂu]	/ʂ/ (/u/)
榕树	[ɻuŋ.ʂu]	/ʂ/ (/u/)	归属	[kwei.ʂu]	/ʂ/ (/u/)
读书	[tu.ʂu]	/ʂ/ (/u/)	宽恕	[kʰwan.ʂu]	/ʂ/ (/u/)
签署	[tɕʰjɛn.ʂu]	/ʂ/ (/u/)			
思考	[sɻ.khɑu]	/s/ (/i/)	寺庙	[sɻ.mjɑu]	/s/ (/i/)
司法	[sɻ.fa]	/s/ (/i/)	私人	[sɻ.ɻən]	/s/ (/i/)
思念	[sɻ.njən]	/s/ (/i/)	丝绸	[sɻ.ʈʂʰou]	/s/ (/i/)
粉丝	[fən.sɻ]	/s/ (/i/)	构思	[kou.sɻ]	/s/ (/i/)
类似	[lei.sɻ]	/s/ (/i/)	放肆	[fɑŋ.sɻ]	/s/ (/i/)
公司	[kuŋ.sɻ]	/s/ (/i/)	自私	[tsɻ.sɻ]	/s/ (/i/)
撒娇	[sa.tɕjɑu]	/s/ (/a/)	三角	[san.tɕjɑu]	/s/ (/a/)
散发	[san.fa]	/s/ (/a/)	撒谎	[sa.xwɑŋ]	/s/ (/a/)
散漫	[san.man]	/s/ (/a/)	赛跑	[sai.pʰɑu]	/s/ (/a/)
木塞	[mu.sai]	/s/ (/a/)	雨伞	[jy.san]	/s/ (/a/)
比赛	[pi.sai]	/s/ (/a/)	花洒	[xwa.sa]	/s/ (/a/)
分散	[fən.san]	/s/ (/a/)	懒散	[lan.san]	/s/ (/a/)
苏醒	[su.ɕiŋ]	/s/ (/u/)	俗称	[su.ʈʂʰəŋ]	/s/ (/u/)

速度	[su.tu]	/s/ (/u/)	塑料	[su.ljɑu]	/s/ (/u/)
诉苦	[su.khu]	/s/ (/u/)	素材	[su.tsh]	/s/ (/u/)
倾诉	[tɕʰiŋ.su]	/s/ (/u/)	朴素	[pʰu.su]	/s/ (/u/)
习俗	[ɕi.su]	/s/ (/u/)	归宿	[kwei.su]	/s/ (/u/)
严肃	[jɛn.su]	/s/ (/u/)	追溯	[ʈʂwei.su]	/s/ (/u/)
大象	[ta.ɕjɑŋ]	filler	大众	[ta.ʈʂuŋ]	filler
皮球	[pʰi.tɕhjou]	filler	比较	[pi.tɕjɑu]	filler
图纸	[thu.ʈʂɻ̩]	filler	普及	[pʰu.tɕi]	filler
宇宙	[jy.ʈʂou]	filler			
优雅	[jou.ja]	filler	和平	[xɤ.pʰiŋ]	filler
飞翔	[fei.tɕjɑŋ]	filler	智慧	[ʈʂɻ̩.xwei]	filler
滋润	[tsɻ̩.ɻwən]	filler	苍凉	[tsʰɑŋ.ljɑŋ]	filler
勇敢	[juŋ.kan]	filler	野心	[je.ɕin]	filler
业绩	[je.tɕi]	filler	宫殿	[kuŋ.tjɛn]	filler
纪念	[tɕi.njɛn]	filler	绕道	[ɻɑu.tɑu]	filler
仍然	[ɻəŋ.ɻan]	filler	荣誉	[ɻuŋ.jy]	filler
脆弱	[tsʰwei.ɻwo]	filler	符号	[fu.xɑu]	filler
海鲜	[xai.ɕjɛn]	filler	绚丽	[ɕɥɛn.li]	filler
梦幻	[məŋ.xwan]	filler			

Appendix B

Demographic Questionnaire for Friend-with-Friend Conversation

Before the beginning of the friend-with-friend conversation, I will first collect some demographic information from the focal Xiamen participants and their friends. The following questions will be asked.

- How old are you?
- What is your place of origin?
- Where did you grow up?
- Where else have you lived?
- What year are you in college?
- What is your major in college?
- Where are your parents from?
- What do your parents do for a living?
- What Chinese dialects do you speak?
- What Chinese dialects do your parents speak?

Appendix C

Friend-with-friend Conversation Prompt

Version A

Part 1 School Life

1. Are you a part of any student organization? What kind of activities do they host? How do they recruit new members?
2. Have you visited other colleges? What are some differences between your own school and these colleges?
3. Talk about a few things that you would like to accomplish before graduating college.
4. During the semester, where have you been over the weekends? If you and your friend plan to go out next weekend, what would you do?
5. What are some issues you have with the current curriculum (difficulty, workload and schedule)? What kind of changes would you suggest?
6. What are some aspects of your major that are less known or often mistaken?
7. What are some aspects of college life that are different from your expectations?
8. What is the gender ratio of your major? Do you think this factor affects your academic life?

   Part 2 Personal Traits and Experience

9. Talk about something that made you happy this week.

10. What are some birthday rituals that you have? How do you spend your birthdays in college?

11. What is one bad habit of others that you cannot tolerate?

12. Talk about one stupid you did as a child.

13. What is the craziest/most impressive dream you have ever had?

14. What is the most ridiculous rumor that you have seen on WeChat's Moments[1]?

15. Which sport you are best/worst at? Have you competed in a race in college?

16. Have you done anything crazy recently? Do you have any stories to share?

Part 3 Hobbies and Interests

17. What are some common interests you both have? Is there any interesting news about them?

18. What is the most impressive food you have had in Beijing? Any recommendations?

19. What are some goals you have aside from academic-related ones?

20. What was your ideal job as a child? Why?

21. What are some impressive travelling experiences you have had? What are some of your future travel plans?

22. If you can become a celebrity for a day, who would become? Why?

23. Please introduce a song that you have been listening to lately.

24. If you were granted a one-year vacation now, how would you spend it?

[1]WeChat is a popular instant messaging application developed by a Chinese company. It has a "Moments" function comparable to Facebook's Timeline, where people can share some short posts with friends who are following them. It is a crucial part of interpersonal communication for many Chinese people these days.

Version B

Part 1 School Life

1. How did you spend your last summer vacation? Do you have anything interesting to share?
2. What are some differences between high school and college lives?
3. What are two of your favorite and least favorite courses in college? Why?
4. What kind of preparation for college you would you recommend?
5. What are some food recommendations on and off campus? How did you discover them?
6. What are some interesting traditions or habits in your class/dorm?
7. What are some things in college that you are having a hard time getting used to?
8. If you can switch your major, what major would you choose? Why?

   Part 2 Personal Traits and Experience

9. Talk about a new thing you' ve tried recently and how you think of it
10. What is the most precious/strange gift you have ever received? What is the story behind it?
11. How do you spend the Chinese New Year with your family? What are some differences between now and when you were a child?
12. What do your parents often post on WeChat' s Moments? Do you interact with them on Moments? Why?
13. What was your favorite animation as a child? What was it about?

14. Talk about an awkward experience you had recently.

15. What is your earliest memory?

16. How do you release your pressure from school and life?

    Part 3 Hobbies and Interests

17. Please introduce two movies/TV shows/animations that you have watched recently.

18. If you have time, what skills would you like to learn? (They don't have to serve academic purposes.)

19. If you set aside the concerns for income, what kind of job you wish to do? Why?

20. Where do you want to go in Beijing? Why?

21. Have you watched any sports games recently? What are some interesting stories?

22. If you were screenwriters, what kind of role you would give each other?

23. If you can have limitless supply of something for a year, what would it be?

24. What are some foods that other people like but you hate?

Appendix D

Reading passages

The focal Xiamen participants first read the Beijing passages and then the Xiamen passages. The tokens of interest are listed in the charts following the English translations. No other words in the passages contain the variables except for the case of 是 (/ʂɿ/, "be"), which were excluded from the analysis.

Xiamen

厦门，又名鹭岛，位于福建东南端，是闽南金三角经济区之一。厦门由包括本岛在内的几个岛屿组成，陆地面积约为 1700 平方公里。厦门的海岸线蜿蜒曲折，港口条件优越，是我国对外贸易的重要口岸。厦门气候宜人，环境优美，屡次入选全国宜居城市。随着近年旅游业的迅速发展，交通愈加便利，出行费用愈加低廉，来厦游玩的旅客也日渐增多。

鼓浪屿是厦门最有名气的旅游景点。鼓浪屿的景观是小岛历史的缩影，从菽庄花园到八卦楼再到三一堂，每一栋建筑仿佛在讲述一段沧桑的岁月。厦门本岛也有很多值得一去的景点，环岛路，五缘湾和南普陀寺既吸引了众多游客，也是市民打发闲暇时光的好去处。

厦门的美食也让许多游客流连忘返。沙茶面，土笋冻和烧肉粽都是著名的小吃。在厦门，还可以体验历史悠久的闽南茶文化。夏天的夜晚，找一个凉快的地方，品尝冲泡讲究的功夫茶，配上些精致的茶点，与朋友闲话家常，静下心来体会厦门闲散的节奏。

若在中秋来厦，还有机会参与厦门的传统民俗——博饼。传说民族英雄郑成功的部将为了让士兵们在节日里忘却思乡之苦，经过一番思考，研究设计出了博饼游戏。博饼以科举头衔为基础，设有状元、对堂、三红、四进等丰富的奖项。这项颇具趣味性的活动为中秋佳节增添了些许热闹的气息。

Xiamen, also known as the Island of Egret, is located in the southeast of the Fujian province, in the Hokkien Golden Triangle economic zone. Xiamen consists of several islands,

with a land area of 1700 square kilometers. Xiamen has a curvy coastline, making it an important port for international trade. Xiamen, with its pleasant climate and beautiful scenery, has been awarded one of the most livable cities in China multiple times. With the growth of the tourism industry and development of transportation, more and more tourists are coming to Xiamen.

The Gulang Island is the most famous tourist site in Xiamen. The architecture on the island is a miniature of this own history. There are also many places of interest on the Xiamen Island, which are favored by the tourists and locals alike.

The cuisine in Xiamen is also very impressive. Some famous dishes include Satay noodles and Zongzi. In Xiamen, you can also have a taste of its tea culture. On a summer night, when gathering with your friends, you can enjoy some Gongfu tea and refreshments.

If you come to Xiamen around the Middle Autumn festival, you will have a chance to participate in a local custom, the moon-cake dice game. It is said that in the Qing dynasty, a marshal invented this game to prevent the soldiers from feeling homesick. The prices in the dice game are based on the titles in the imperial examination system. This interesting game has made the Middle Autumn festival much more lively for Xiamen people.

Table D.1: Tokens of interest for Xiamen passage

Word	**IPA**	**Variable**	**Word**	**IPA**	**Variable**
城市	[ʈʂʰəŋ.ʂɻ]	/ʂ/	历史	[li.ʂɻ]	/ʂ/
菽 庄 花园	[ʂu.ʈʂwɑŋ.xwa.ɥɛn]	/ʂ/	讲述	[tɕjɑŋ.ʂu]	/ʂ/
市民	[ʂɻ.min]	/ʂ/	时光	[ʂɻ.kwɑŋ]	/ʂ/
美食	[mei.ʂɻ]	/ʂ/	沙 茶 面	[ʂa.ʈʂʰa.mjɛn]	/ʂ/
烧 肉 粽	[ʂɑu.ɻou.tsuŋ]	/ʂ/	历 史 悠久	[li.ʂɻ.jou.tɕjou]	/ʂ/

配上	[pʰei.ʂɑŋ]	/ʂ/	传说	[ʈʂʰwan.ʂwo]	/ʂ/
设有	[ʂɤ.jou]	/ʂ/	设计	[ʂɤ.tɕi]	/ʂ/
金三角	[tɕin.san.tɕjɑu]	/s/	随着	[swei.ʈʂɤ]	/s/
迅速	[ɕyn.su]	/s/	缩影	[swo.jiŋ]	/s/
三一堂	[san.ji.tʰɑŋ]	/s/	沧桑	[tsʰɑŋ.sɑŋ]	/s/
岁月	[swei.ɥe]	/s/	南普陀寺	[nan.pʰu.tʰwo.si]	/s/
土笋冻	[tʰu.swən.tuŋ]	/s/	闲散	[ɕjɛn.san]	/s/
民俗	[min.su]	/s/	思乡	[si.ɕjɑŋ]	/s/
思考	[si.kʰɑu]	/s/	三红	[san.xuŋ]	/s/
四进	[si.tɕin]	/s/			
费用	[fei.juŋ]	NT - PTH	名气	[miŋ.tɕʰi]	NT - PTH
打发	[ta.fa]	NT - PTH	凉快	[ljɑŋ.kʰwai]	NT - PTH
讲究	[tɕjɑŋ.tɕjou]	NT - PTH	功夫茶	[kuŋ.fu.ʈʂʰa]	NT - PTH
朋友	[pʰəŋ.jou]	NT - PTH	状元	[ʈʂwɑŋ.ɥɛn]	NT - PTH
热闹	[ʐɤ.nɑu]	NT - PTH			NT - PTH
面积	[mjɛn.tɕi]	NT - NORTH	气候	[tɕʰi.xou]	NT - NORTH
便利	[pjɛn.tɕi]	NT - NORTH	仿佛	[fɑŋ.fu]	NT - NORTH
夏天	[ɕja.tʰjɛn]	NT - NORTH	精致	[tɕiŋ.ʈʂɻ]	NT - NORTH
机会	[tɕi.xwei]	NT - NORTH	英雄	[jiŋ.ɕjuŋ]	NT - NORTH
研究	[jɛn.jou]	NT - NORTH	气息	[tɕʰi.ɕi]	NT - NORTH
值得	[ʈʂɻ.tɤ]	NT - NORTH	活动	[hwɔ.tuŋ]	NT - NORTH
位于	[wei.jy]	/w/ → /ʊ/	约为	[ɥe.wei]	/w/ → /ʊ/

蜿蜒	[wan.jɛn]	/w/ → /ʊ/	我国	[wo.kwo]	/w/ → /ʊ/
对外	[twei.wai]	/w/ → /ʊ/	游玩	[jou.wan]	/w/ → /ʊ/
五缘湾	[wu.ɥɛn.wan]	/w/ → /ʊ/	流连忘返	[ljou.ljɛn.wɑŋ.fan]	/w/ → /ʊ/
茶文化	[ʈʂʰa.wən.xwa]	/w/ → /ʊ/	夜晚	[je.wan]	/w/ → /ʊ/
为了	[wei.lɤ]	/w/ → /ʊ/	忘却	[wɑŋ.tɕʰɥe]	/w/ → /ʊ/
以...为	[ji.wei]	/w/ → /ʊ/	趣味	[tɕʰy.wei]	/w/ → /ʊ/
为中秋	[wei.ʈʂuŋ.tɕʰjou]	/w/ → /ʊ/			

Beijing

北京是中国的政治、文化中心, 也是著名的旅游城市。北京地处温带，属于大陆性气候，四季分明，每个季节都有不同的景致。无论是春天颐和园的桃花，还是秋天香山的红叶，都别有情趣。

北京拥有众多名胜古迹，故宫、长城和恭王府等热门景点吸引了众多中外游客。穿梭在规模宏伟、气派十足的宫殿之间，偶尔驻足倾听导游讲述各种典故，像是处于另一个时空。北京也是博物馆之都，有超过一百所大大小小的场馆，一定能满足你的好奇心。

在北京你不仅能品味它浑厚的底蕴，也能目睹它日新月异的变化。在三里屯酒吧街，打扮入时的年轻人享受着繁华热闹的夜生活。在烟袋斜街、南锣鼓巷，你既能一览古色古香的牌楼，也能欣赏店家对传统的崭新演绎。有机会还可以在四合院酒店住上一晚，与素不相识的街坊邻居天南地北地聊聊天，在平淡中体味胡同文化的精髓。

来北京也别忘了品尝几样地道的北京美食。远近闻名的北京烤鸭鲜香酥脆，搭配甜面酱和各种素菜，风味绝佳，能满足最挑剔的食客。如果要找老北京特色小吃，不妨去护国寺小吃店转一转，这里品种齐全，价格公道。豌豆黄、驴打滚、麻团，你能想到的京味小吃应有尽有。若想买些礼品，可以去老店稻香村看一看。芝麻酥糖、核桃排、枣糕等等名吃虽然卖相朴素，但做工讲究，口味有保证。

Beijing is the political and cultural center of China, and it is also a famous tourist destination. Beijing is in the temperate zone and has continental climate. The climate in every season is very distinct, creating different seasonal sceneries. In the spring, you can see the peach blossoms in the Summer Palace; in the autumn, you can appreciate the red leaves in the Fragrant Hills.

Beijing has a great number of historical spots that attract many domestic and international tourists, including the Forbidden City, the Great Wall and Prince Gong’ s Mansion. When you wander around in the magnificent palaces and listen to ancient stories, it is as if you have fallen into a different time. Beijing is also the capital of museums, which has more than 100 venues.

In Beijing, not only can you feel its deep cultural tradition, you can also witness the

rapid development of its modern life. In many bars in the Sanlitun Street, trendy young adults are having an exciting nightlife. In Skewed Tobacco Pouch Street and South Luogu Ally, you can see the traditional bridge archway, as well as the shops' modern interpretation of the traditional spirit. If you have the chance, you should also considering spending a night in one of the courtyard houses, and experience the essence of the Hutong culture.

When in Beijing you should also have a taste of the local cuisine. The famous Roasted Peking Duck, when paired with vegetables and sweet fermented floor paste, can satisfy even the pickiest customer. If you would like to taste some local snacks, you can go to the snack restaurant in Huguo Temple, where you can find a variety of products at a reasonable price. If you wish to buy some souvenirs, you can go to the century-old pastry shop Daoxiangcun, where you can find plain but tasty local favorites.

Table D.2: Tokens of interest for Beijing passage

Word	**IPA**	**Variable**	**Word**	**IPA**	**Variable**
城市	[ʈʂʰəŋ.ʂɻ̩]	/ʂ/	属于	[ʂu.jy]	/ʂ/
香山	[ɕjɑŋ.ʂan]	/ʂ/	名胜古迹	[miŋ.ʂəŋ.ku.tɕi]	/ʂ/
十足	[ʂɻ̩.tsu]	/ʂ/	讲述	[tɕjɑŋ.ʂu]	/ʂ/
时空	[ʂɻ̩.khuŋ]	/ʂ/	入时	[ɻu.ʂɻ̩]	/ʂ/
享受	[ɕjɑŋ.ʂou]	/ʂ/	夜生活	[je.ʂəŋ.xwo]	/ʂ/
欣赏	[ɕin.ʂɑŋ]	/ʂ/	住上	[ʈʂu.ʂɑŋ]	/ʂ/
素不相识	[su.pu.ɕjɑŋ.ʂɻ̩.]	/ʂ/, /s/	美食	[mei.ʂɻ̩]	/ʂ/
食客	[ʂɻ̩.kʰɤ]	/ʂ/			
四季	[si.tɕi]	/s/	穿梭	[ʈʂʰwan.swo]	/s/

一 百 所	[ji.pai.swo]	/s/	三 里 屯	[san.li.tʰwən]	/s/
古 色 古香	[ku.sɤ.ku.ɕjɑŋ]	/s/	民俗	[min.su]	/s/
四 合 院	[si.xɤ.ɥɛn]	/s/	精髓	[tɕiŋ.swei]	/s/
酥脆	[su.tsʰwei]	/s/	素菜	[su.tsʰai]	/s/
特色	[tɤ.sɤ]	/s/	护 国 寺	[xu.kwo.si]	/s/
酥糖	[su.tʰɑŋ]	/s/	朴素	[pʰu.su]	/s/
打扮	[ta.pan]	NT - PTH	热闹	[ʐɤ.nɑu]	NT - PTH
牌楼	[pʰai.lou]	NT - PTH	街坊	[tɕje.fɑŋ]	NT - PTH
地道	[ti.tɑu]	NT - PTH	挑剔	[tʰjɑu.tʰi]	NT - PTH
公道	[kuŋ.tɑu]	NT - PTH	芝麻	[ʈʂɻ.ma]	NT - PTH
核桃	[xɤ.tʰɑu]	NT - PTH	讲究	[tɕjɑŋ.tɕjou]	NT - PTH
气候	[tɕʰi.xou]	NT - NORTH	景致	[tɕjiŋ.ʈʂɻ]	NT - NORTH
春天	[ʈʂʰwən]	NT - NORTH	秋天	[tɕʰjou.tʰjɛn]	NT - NORTH
规模	[kwei.mwo]	NT - NORTH	气派	[tɕʰi.pʰai]	NT - NORTH
典故	[tjɛn.ku]	NT - NORTH	店家	[tjɛn.tɕja]	NT - NORTH
机会	[tɕi.xwei]	NT - NORTH	邻居	[lin.tɕy]	NT - NORTH
齐全	[tɕʰi.tɕʰɥɛn]	NT - NORTH			
文化	[wən.xwa]	/w/ → /ʊ/	温带	[wən.tai]	/w/ → /ʊ/
无论	[wu.lun]	/w/ → /ʊ/	恭 王 府	[kuŋ.wɑŋ.fu]	/w/ → /ʊ/
中外	[ʈʂuŋ.wai]	/w/ → /ʊ/	宏伟	[xuŋ.wei]	/w/ → /ʊ/
博 物 馆	[pwo.wu.kwan]	/w/ → /ʊ/	一晚	[ji.wan]	/w/ → /ʊ/

体味	[tʰi.wei]	/w/ → /ʊ/	胡同文化	[xu.tʰuŋ.wən.xwa]	/w/ → /ʊ/
别忘了	[pje.wɑŋ.lɣ]	/w/ → /ʊ/	远近闻名	[ɥɛn.tɕin.wən.miŋ]	/w/ → /ʊ/
豌豆黄	[wan.tou.xwɑŋ]	/w/ → /ʊ/	京味	[tɕjiŋ.wei]	/w/ → /ʊ/
口味	[kʰou.wei]	/w/ → /ʊ/			

Appendix E

Ethnographic Interview Schedule

DEMOGRAPHIC

- Where were you born?
- Where did you grow up? (Which district in Xiamen?)
- Which middle school and high school did you go to?
- What do your parents do for a living?
- What year are you?
- What is your major?

FOR PLACE-LINKED ATTITUDES

Sociocultural attitudes

Being from Xiamen

- How would you respond when people ask ‘where are you from’? (Fujian or Xiamen)
- What are some reactions that you've received when you say that you're from Xiamen? How do you like these reactions?
- How would you introduce Xiamen to your friends in college?

Being in Beijing

- Why did you choose to come to Beijing for college?

- How do you like Beijing so far?
- What are some aspects of living in Beijing that you are uncomfortable with?

North vs. South

- Where is the divide between the North and the South in your opinion? Please draw a line of the map. [See Figure E.1 for the map]
- Do you think there are any important differences between the North and the South? If so, what are they?
- When do you feel like a Southerner in Beiing?

Post-graduation plan

- What is your post-graduation plan? (e.g. Beijing, other metropolis, Xiamen, foreign countries)
  - How did you make the decision?
  - Are you making any preparation for the plan?

Language attitudes

Xiamen Mandarin

- What some differences between Xiamen and Northern Mandarin?
- Are there any linguistic differences between different Xiamen Mandarin speakers?
- How does a typical Xiamen Mandarin speaker talk?
- What are some comments you've received regarding your Mandarin pronunciation in college? How do you like them?

Taiwan Accent

Figure E.1: The map used in both map tasks

- Have people ever said that you have a "Gangtai accent" or "Taiwan accent" ?
- How you like it? Is it a compliment or an insult?
- What is your impression of Taiwan accent?
- What are some differences between Xiamen and Taiwan Mandarin?
- How do you like it when a Northerner tries to adopt a Taiwan accent?

Northern Mandarin and Putonghua

- What are some accents of Mandarin that you can recognize?
- What is your impression of Northern Mandarin? Have you opinion changed over time?
- Can you perform a Northern Mandarin accent?
- Have you noticed any differences between different types of Northern Mandarin?
- Have you noticed any differences between Beijing Mandarin and Putonghua?
- Where in the country do you think people have a similar Mandarin accent as you? Please indicate in on the map. [See Figure E.1 for the map]

Linguistic accommodation

- Do you expect your Mandarin to change in college before coming here?
- Do you know people who have changed their accent in college?
- Do you switch your accent for any occasions?

FOR PERCEPTION EXPERIMENT

College types

- How big is your college? (space, population)

- How well do you know about other colleges in Beijing?
- Do you think there are salient student types for different colleges? If so, what are they?

Major

- What is your major in college?
  - What types of classes? How big are the classes?
  - What is the gender distribution of your class?
- How often do you hang out with people of other majors?
- Are there differences that you noticed between students of different majors?

Extra-curricular activities

- What is the situation with extra-curricular activities in your schools?
  - What do you know about in terms of student organizations and student clubs at different levels?
  - Are you part of any organization? What is your job? What activities have you been involved in?

College student stereotypes

- Can you think of some common types (or stereotypes) of college students? What are they?
  - How can you tell one type from the others?

Status and solidarity in college

- What do you think constitute an ideal college experience?

FOR SOCIAL CONTACT

Transition into college

- How you do feel about the transition into college life?
  - What are some biggest challenges that you have to face?(e.g. schedule, course work, dorm life, cultural differences, language)
  - What do you like the most about college?
- What is your dorm life like?
  - How many people live together? For how long?
  - What are your dorm mates' classes/majors?
  - Where are your dorm mates' from?
  - What is the general atmosphere in your dorm?

Friend circle

- List ten of your closest friends (don't need to give me their names)
- Where are they from? (i.e. North, South but not Xiamen, Xiamen)
- Where did you meet them? (i.e. college, Xiamen, others)
- Do you have friends from the same high school in Beijing? If so, how often do you contact them? In what way?

Appendix F

Stimuli for Social Perception Experiment

The following passages will be used as the stimuli in the social perception experiment. Each passage contains one linguistic variable of interest, and the tokens containing the variables are underlined.

/ʂ/

小唐参加了学校的迎新活动，负责带学弟学妹参观校园。他们先去了图书馆，然后看了体育馆和主要的教学楼。大家集体在食堂吃饭时，刚好碰到了小唐的几个室友，大家就一起向大一的同学介绍了大学生活。从学业到社团活动到休闲娱乐，把新生最关心的话题都讲了一遍。最后小唐把新同学带到了指定的教室，结束了一天的行程。

Tang joined the school's orientation team, and was responsible for showing the freshmen around campus. They first went to the library, and then they saw the gym and the main buildings. When everyone was eating at the school cafeteria, they ran into Tang's roommate. Everybody introduced college life to the freshmen. From academic life to social activities to entertainment, they covered everything that the new students were curious about. At last, Tang brought the new students to the designated classroom, and ended the day's trip.

Word	**IPA**	**Variable**	**Word**	**IPA**	**Variable**
图书馆	[tʰ.ʂu.kwan]	/ʂ/	食堂	[ʂɻ.tʰɑŋ]	/ʂ/
吃饭时	[tʂʰɻ.fan.ʂɻ]	/ʂ/	室友	[ʂɻ.jou]	/ʂ/
介绍	[tɕje.ʂau]	/ʂ/	生活	[ʂɤŋ.xwo]	/ʂ/
社团	[ʂɤ.tʰwan]	/ʂ/	新生	[ɕin.ʂɤŋ]	/ʂ/
教室	[tɕjɑu.ʂɻ]	/ʂ/	结束	[tɕje.ʂu]	/ʂ/

/w/ → /ʊ/

小张为了假期能和家人一起旅游，在好几天前就写完了期末论文。他正准备提交文章，忽然接到了团委负责人的电话，让他通知其他几个同学去教学楼讨论下学期的安排。大家确定了大致的方案，就各自回去了。他去外面吃了晚饭，回来打开电脑发现网络连接出了问题，就关机了。后来几天他忙着安排行程，一直忘记提交作业，直到截止日期前最后一天才想起来。

In order to enjoy his family trip during the break, Zhang finished his final paper several days ago. When he was about to submit the paper, he got a phone call from the league committee office. He was asked to notify several classmates of a meeting in the academic building that discusses the plans for next semester. Once they had finalized the plan, everybody went back (to their dorms). Zhang had his dinner outside, and came back his room only to find that there were some problems with the Internet connection. So he shut down his computer. He was busy with the travel schedule for the following days, and kept forgetting to turn in his assignment until the last day before the deadline.

Word	**IPA**	**Variable**	**Word**	**IPA**	**Variable**
为了	[wei.lɤ]	/w/ → /ʊ/	外面	[wai.mjɛn]	/w/ → /ʊ/
写完	[ɕje.wan]	/w/ → /ʊ/	晚饭	[wan.fan]	/w/ → /ʊ/
论文	[lun.wən]	/w/ → /ʊ/	网络	[wɑŋ.lwo]	/w/ → /ʊ/
文章	[wən.tʂɑŋ]	/w/ → /ʊ/	问题	[wən.thi]	/w/ → /ʊ/
团委	[thwan.wei]	/w/ → /ʊ/	忘记	[wɑŋ.tɕi]	/w/ → /ʊ/

Neutral tone

小徐很会和人打交道，和他走在一起经常看到他和各种各样的人打招呼。他不仅在校内有很多朋友，就连学校附近的店家都和他关系很好。只要有机会帮助别人，他都会尽力，从

不嫌麻烦。他如果得到了别人的帮助，都会客气地表达感谢。他兴趣广泛，学习成绩也挺好，但不会在他人面前刻意卖弄自己。

Xu has very good interpersonal skills. When you walk with him, you can see him greeting all sorts of people. He not only has many friends on campus, he is event close to the vendors off-campus. Whenever he has a chance to help others, he would do his best and never complain. If he received help from others, he would express his gratitude politely. He has a wide interest and good academic record, but he won't show off his knowledge.

Word	**IPA**	**Variable**	**Word**	**IPA**	**Variable**
交道	[tɕjɑu.tɑu]	NT - North	招呼	[tʂɑu.xu]	NT - PTH
店家	[tjɛn.tɕjaa]	NT - North	朋友	[phəŋ.jou]	NT - PTH
关系	[kwan.ɕi]	NT - North	麻烦	[ma.fan]	NT - PTH
机会	[tɕi.xwei]	NT - North	客气	[khɤ.tɕhi]	NT - PTH
成绩	[tʂhəŋ.tɕi]	NT - North	卖弄	[mai.nuŋ]	NT - PTH