# ALTERNATION OF [n] AND [l] IN SICHUAN DIALECT, STANDARD MANDARIN AND ENGLISH: A SINGLE-CASE STUDY

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**Abstract**

This study tries to clarify some details of alternation of [n] and [l] in Sichuan dialect, Standard Mandarin, and English as found in the speech of Sichuan-dialect-speaking EFL learners. The data are collected from a Chinese female Sichuan-dialect-speaking EFL learner. She is asked to read out a word-list and a story in Sichuan dialect, Standard Mandarin and English. The result shows that the substitutions occur in syllable-initial [n] rather than in syllable-initial [l]. However, the same phenomena do not appear in syllable-final [n] or [l]. The data also demonstrate that the alternations are not free variation.

## 1. Introduction

Sichuan dialect is a Chinese dialect which is spoken in Sichuan province. Most Sichuan people use Sichuan dialect as their community language. The population in Sichuan is the third largest in China (News Net of Sichuan, 2006).

There are many differences between Sichuan dialect and Standard Mandarin in phonetics, vocabulary, and grammar. This study only focuses on the phonetic phonological aspects of Sichuan dialect. One of the typical phonetic features of Sichuan dialect is the alternation of [n] and [l], which is shared by many southwestern Chinese dialects, such as Cantonese. The phenomena also are detected when Cantonese-speaking people speak English. Wong & Setter (2002:351) point out 'one of the interlanguage phonological features of Cantonese-speaking ESL learners of Hong Kong is that syllable-initial [n] and [l] are not distinct (Luke and Richards 1982, Bolton and Kwok 1990, Hung 2000, Chan and Li 2000)'. They also mention that this kind of phonological shift has only been documented as yet in Hong Kong Cantonese speakers. However, according to the author's own observation, the alternations also occur among Sichuan-dialect-speaking EFL learners, for example, they pronounce [lait] for *night*. This phenomena can even be detected when they speak Standard Mandarin, for example, they pronounce [laɪ fən] for *nai fen* '*milk powder*'. This is an obvious case of language transfer in the second language acquisition. There are several studies about Cantonese-speaking ESL learners, but very few studies on Sichuan-dialect-speaking EFL learners.

The aim of this study is to clarify some details of alternation of [n] and [l] in Sichuan-dialect-speaking EFL learners in Sichuan Dialect, Standard Mandarin, and English via a case study.

## 2. Literature Review

Sichuan dialect is a tone language which belongs to the southwestern subdivision of the Standard Mandarin group. It has the same syllable structure as Standard



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(Mandarin) Chinese. Syllable structure is generally given in terms of initials and finals, which represents the segmental phonemic portion of the language. Initials, or *shengmu* in Chinese, are initial consonants which include all the consonants or can be zero, while finals or *yunmu* include medials (semivowels coming after the vowel), the nucleus vowel and the coda (final vowel or consonant). Here medial and coda consonants can be omitted sometimes, as shown in Table 1 below.

Table 1. Sichuan dialect syllable structure

| Suprasegmental :Tone | | | |
|---|---|---|---|
| Initials<br>Onset<br>Initial Consonant | Rime or Finals | | |
| | Medial<br>Semivowel | Nucleus<br>Nuclear Vowel | Coda<br>Final Consonant |

Table2. Sichuan dialect consonants and Standard Mandarin consonants[1]

| Manner of articulation / Place of articulation | Plosive | | Affricate | | Fricative | | Nasal | Lateral approximant |
|---|---|---|---|---|---|---|---|---|
| | Voiceless | | Voiceless | | Voiceless | Voiced | Voiced | Voiced |
| Bilabial | p | $p^h$ | | | | | m | |
| Labiodental | | | | | f | | | |
| Alveolar | t | $t^h$ | ts | $ts^h$ | s | (z) | n | <l> |
| Retroflex | | | <tʂ> | <$tʂ^h$> | <ʂ> | <ʐ> | | |
| Alveolo-palatal | | | tç | $tç^h$ | ç | | (ɲ) | |
| Velar | k | $k^h$ | | | x | | (ŋ ) | |

[1] The table is adapted from Wang 1994:56. The symbols in angle brackets are the consonants which Standard Mandarin has, but do not exist in Sichuan dialect; the symbols in the parentheses exist in Sichuan dialect but not Standard Mandarin. The remaining consonants exist both in Sichuan dialect and Standard Mandarin.

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In Sichuan dialect, there are a total of 19 different consonants, but Standard Mandarin has 21 consonants. The consonants [z], [ɲ], [ŋ] exist in Sichuan dialect, but Sichuan dialect does not have the consonants [tʂ], [ tʂʰ], [ʂ], [ʐ], and [l]. The consonants of Sichuan dialect and Standard Mandarin can be seen in Table 2 above for comparison.

In Sichuan dialect, the alveolar nasal [n] and the lateral approximant [l] are not distinct. The consonant [n] of Sichuan dialect corresponds to a nasal consonant [n] and a lateral approximant [l] in Standard Mandarin (Wang 1994, Ma & Tan 1998, Zhou 2001). The nasal [n] and the lateral [l] are considered to be in free variation in Sichuan dialect (Ma & Tan, 1998: 80). When Sichuan dialect-speaking people speak Standard Mandarin, they cannot pronounce correctly if the word's initial consonant is [n] or [l], for example, they will say [la] for *na 'take'*, [fən lu] for *fen nu 'angry'*. The merging of syllable-initial [n] and [l] in Hong Kong Cantonese are reported as 'a widespread "unconditioned merging" among young speakers' (Zee 1996, cited in Wong & Setter, 2002:352). Do these phenomena also occur in Sichuan dialect? The literature available does not show whether the merging of [n] and [l] in Sichuan dialect is a 'conditioned merging' or an 'unconditioned merging'. Wang (1994:57) points out the nasal consonant [n] of Sichuan dialect is a nasalized lateral approximant in fact, i.e. [l̃]. The author does not find more literature to justify this opinion. The resulting merger of these two large classes of words seems not to have any negative impact on communication within Sichuan dialect speaking community. However, it does sometimes impede communication with non-Sichuan dialect speakers.

Under the influence of their mother tongue, Sichuan-dialect-speaking EFL learners also alternate [n] and [l] in their second language, for example, they pronounce *night* as [lait], *late* as [neit] (Wang 1994:57). The alternations may hinder communication, and definitely result in a non-native accent. The phenomenon of non-distinction of [n] and [l] among Sichuan-dialect-speaking EFL learners is a straightforward case of L1 transfer. Since the understanding of interlanguage phonology has improved over the past decades, it helps us to do research about language transfer. 'Such a case of L1 language transfer is worth investigating because this shows how intricate interlangauge systems can be. It is not simply transfer of a segment from L1 to L2 or the inability to produce a certain segment in L2 because of its absence in leaner's L1. It is the transfer of a reorganization mechanism in L1 to L2, merging two contrastive phonemes in L2 as if they were in the phonological system of the learners' L1' (Wong & Setter, 2002:352).

There is not much study done on the merging of nasal [n] and lateral [l] in Sichuan-dialect-speaking EFL learners. The research questions of this case study focus on providing a picture of the extent to which alternating [n] and [l] manifest in a Sichuan-dialect-speaking EFL learner. It is hoped that answers to the following questions will lead to a better understanding of this alternation.

The questions that this study addresses are:

1. Does this speaker freely alternate [n] and [l]?
2. How frequently does this speaker alternate between the two segments?



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3. Does this speaker substitute [n] for [l] in the same way in Sichuan dialect, Standard Mandarin and English?
4. Does this speaker substitute [l] for [n] in the same way in Sichuan dialect, Standard Mandarin and English?

**3. Methodology**

The speech data on which this study is based were collected from a Sichuan Chinese female native speaker, a university postgraduate student who has been studying at the University of Leeds. She was twenty-four years old when the recording was made. She comes from Sichuan province, China. Her first spoken language is Sichuan dialect, and she learned Standard Mandarin when she was in primary school, at the age of seven. She had been studying English for at least twelve years before the speech data were recorded: three years in a junior high school, three years in a senior high school, four years in a university and two years in a workplace. When the data were collected, she had lived in UK for around seven months. Her overall IELTS score was 6.5, and the speaking band score was 6, which means that she is a 'competent user' with generally effective command of the language despite some inaccuracies, inappropriacies and misunderstandings. The score indicates that she can use and understand fairly complex language, particularly in familiar situation (IELTS Handbook 2005).

The speech data consist of three parts: Sichuan dialect, Standard Mandarin and English. The words were chosen in order to include words that contained the target sounds. Only words with [n] and [l] in syllable-initial and syllable-final will be analyzed in this study. The materials for eliciting Standard Mandarin and Sichuan dialect are the same: a word-list and a short story. They are listed in Appendix 1. The materials for eliciting the English data also comprise a word-list and a short story. They are listed in Appendix 2.

The recordings were done in the phonetic laboratory of the University of Leeds. The speaker was asked to read a Chinese word-list and a Chinese story in Sichuan dialect and Standard Mandarin: both the word-list and the story were read once only. For the English words, the speaker was asked to read each word twice and the story once. The reason is that the words in English word-lists are monosyllable words except the six words with /-nl-/ and /-ln-/ consonant sequences. Although the speaker was aware that the author was interested in her speech, she did not know which sound the author was interested in specifically.

Auditory analysis was used in dealing with this speech data. Words in the Chinese word-list and the English word-list were transcribed in a broad phonetic transcription. Words with [n] or [l] in syllable-initial and syllable-finial were extracted from the Chinese story and the English story used the same kind of transcription. The transcription was done by the author. Instrumental analysis was also used in order to facilitate some findings that are hard to analyze by perceptual analysis. The phonetic analysis software, Speech Station 2, was used to do acoustic analysis for the nasal and the lateral approximant in this study.



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## 4. Analysis of Findings

### 4.1 Overall result

A total of 174 tokens of words with [n] or [l] in syllable-initial and syllable-finial were recorded in this study. 28.9 %( 50) of the tokens are of non-standard pronunciation. The frequencies of [n] and [l] alternations of this speaker in Sichuan dialect, Standard Mandarin and English are listed in term of her performance in Table 3 below.

Table 3 Overall Performances [2]

| | /n/→[n] | /l/→[l] | /n/→[l] | /l/ →[n] |
|---|---|---|---|---|
| Standard Mandarin | 28 | 26 | 19 | 0 |
| Sichuan dialect | 28 | 26 | 19 | 0 |
| English | 21 | 18 | 10 | 2 |

Table 3 shows the speaker has more problems with [n] than [l]. It shows the realization of /n/ by [l] in Sichuan dialect, Standard Mandarin and English, and the realization also of /l/ by [n] in English but not in Standard Mandarin or in Sichuan dialect.

### 4.2 Realization of /n/ by [l] in Sichuan dialect, Standard Mandarin and English

Realisations of /n/ by [l] only occur in syllable-initial /n/ words in this study whether in Sichuan dialect, Standard Mandarin or English.

Sichuan dialect

Three phonetic realisations of nasal consonant /n/ in the onset are detected in the Sichuan dialect speech, that is, [n], [l] and [nl] (See Table 4 below). For example, the speaker pronounces the word *tou nao* (‘*head*’) as *tou lao*, *na lai* (‘*bring*’) as *la lai*. The spectrograms support these findings (See Figure 1.1, 1.2 below). These findings show that the speaker can not disambiguate the alveolar nasal /n/ and the lateral approximant /l/ clearly most of time when speaking Sichuan dialect, her first spoken language. Furthermore, these findings also prove that the alternation of /n/ and /l/ exists in Sichuan dialect.

Table 4 Realization of syllable-initial /n/ in Sichuan dialect

| | /n/→[n] | /n/→[l] | /n/→[nl] |
|---|---|---|---|
| The speaker | 1 | 17 | 1 |

[2] The total number in this table does not amount to 174 tokens due to the phonetic rule of Hanyu Pinyin. For example, the Chinese word ‘*nan*’ is a token, but it will appear twice in Table 3 according to the speaker’s pronunciation.



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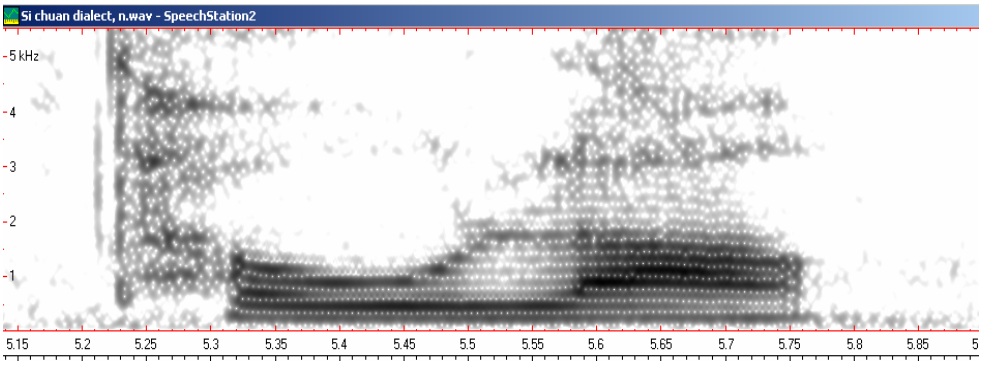
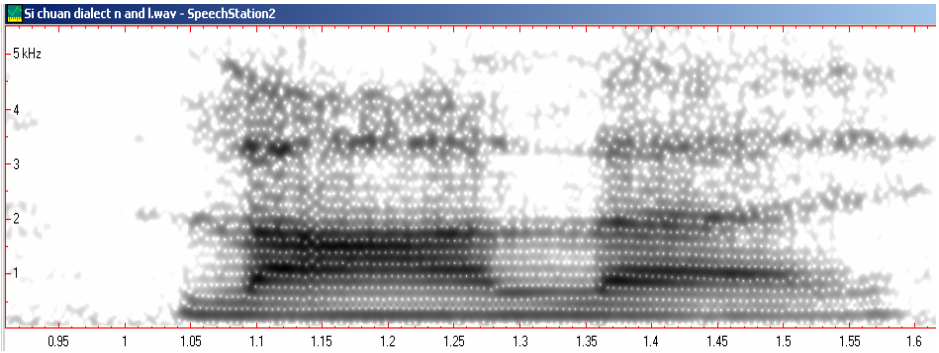
Figure 1.1 The Chinese word *tou nao* '*head*' in Sichuan dialect




[ tʰ o ɥ̩ l ɔ ʊ ]

Figure 1.2 The Chinese word *na lai* '*bring*' in Sichuan dialect




[ l ɑ ː l a ɪ ]

Standard Mandarin

A detailed analysis of this speaker's pronunciation indicates that three phonetic realizations of /n/ are [n], [l] and [nl] in the Standard Mandarin speech (Table 5 below). There are the same realizations of /n/ in Sichuan dialect and Standard Mandarin. Since the speaker first acquired Sichuan dialect, the results in Standard Mandarin indicate that the cause of alterations of /n/ for [l] in syllable-initial [n] words is likely be influenced by Sichuan dialect.

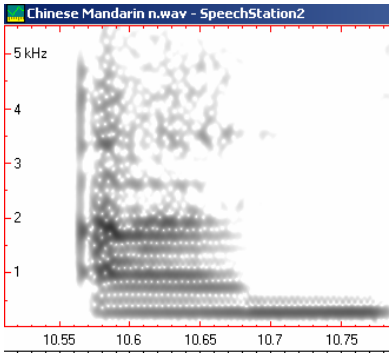
Table 5. Realization of syllable-initial /n/ in Standard Mandarin

| | /n/→[n] | /n/→[l] | /n/→ [nl] |
|---|---|---|---|
| The speaker | 1 | 17 | 1 |

The speaker does not pronounce a target-like /n/ consonant most of the time. There is only one Chinese word *niu* where the speaker realizes /n/ correctly. The spectrogram (Figure 2 below) shows the target [n] which this speaker pronounces in the data. We can see there is a bar near the base line, indicating the energy at around 200Hz, and no energy appears in the middle of the spectrogram. Another spectrogram

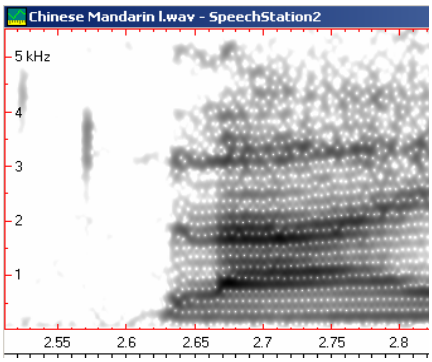
(Figure 3 below) shows the target [l] which this speaker produces in the data. Compared with the alveolar nasal [n] (Figure2 below), we can see the [l] sound has more energy than the [n] sound. The main difference between this [n] sound and this [l] sound is the second formant which is around 1600Hz, and the third formant which is around 3000Hz. This point conforms to what Ladefoged says 'laterals differ from nasals in that their formants (particular the second formant) more readily show distinctions among them' (2003: 145).

Figure 2. Target /n/




a n

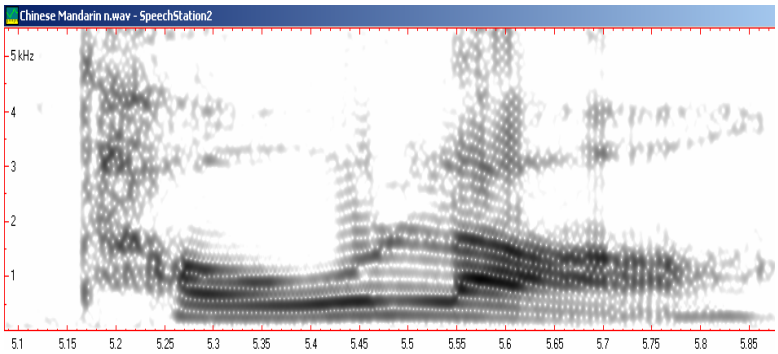
Figure 3. Target /l/




l a

However, the target [n] occurs in the coda position most of the time, seldom in onset position. For example, when the speaker said the Chinese word *tou nao* '*head*', she pronounced it as [ t oʊ̯ lɔʊ] (Figure 4, below). Compared with the spectrograms for her normal [n] and [l] sound, it has higher energy and the second formant is around 1700 Hz. Another example occurs in the Chinese word *na lai* '*bring*' in which the speaker produces [l] instead of [n] in syllable-initial /n/-words.

Figure 4 The Chinese word *tou nao*'*head*'in Standard Mandarin

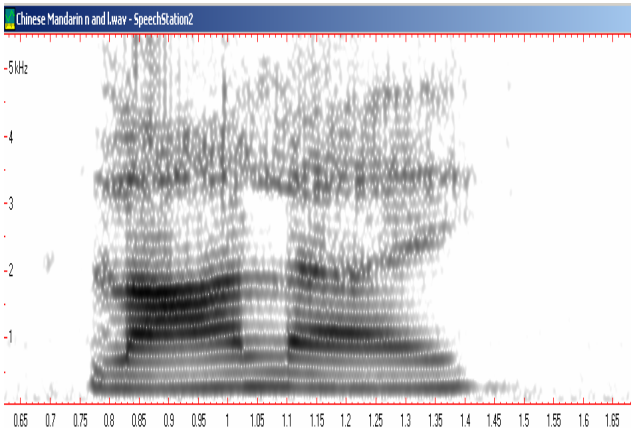



[ tʰ oʊ̯ l ɔ ʊ ]

Figure 5.1 (below) shows the Chinese word *na lai* '*bring*' which the speaker

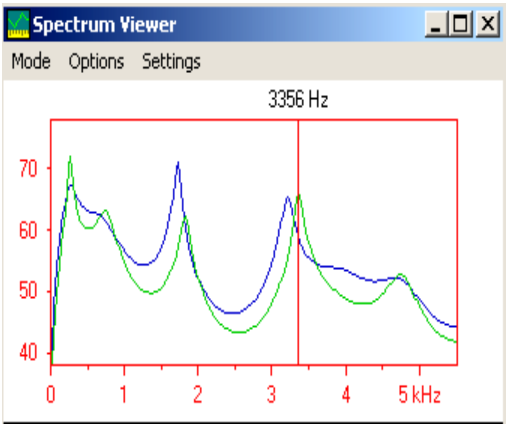
pronounced [l a l a ɪ]. The spectra (Figure 5.2 below) show that both consonants in this word are lateral approximants, because both spectra (the blue one represents the first [l], and the green one represents the second [l]) have high energy up to the 3500Hz region.

Figure 5.1 The Chinese word *na lai* '*bring*' in Standard Mandarin



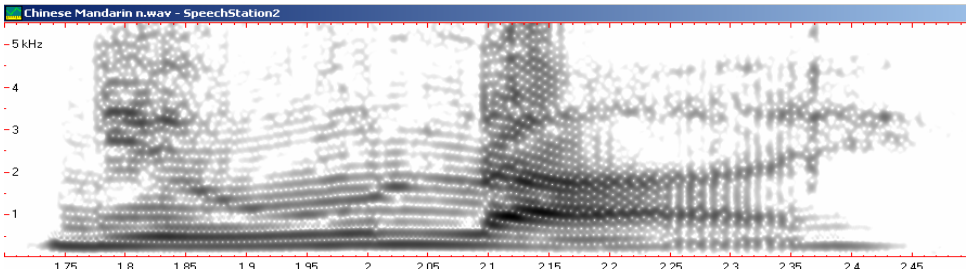

[l a l a ɪ ]

Figure 5.2 The comparison spectrum of a Chinese word *na lai* '*bring*'



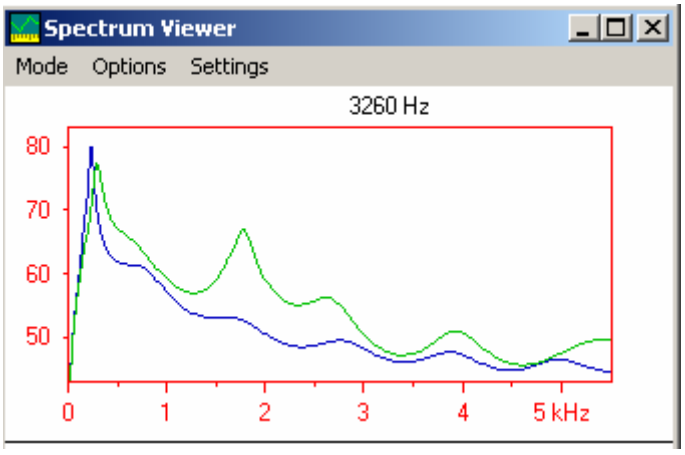

Surprisingly, the speaker does pronounce [n] in the Chinese word *niu nai* '*milk*', which she pronounces as [ n uɔː l a ɪː] (Figure 6.1 below). This might be influenced by the subsequent high vowel because other nasals in the onset that are produced as [l] are not followed by a high vowel. This point would need to be investigated further. From the spectrum (Figure 6.2 below), we can see the blue line has a low first formant about 250 Hz, and a large bandwidth which reflects a rapid rate of absorption of sound energy, indicating a nasal sound. The green line clearly has higher energy than the blue line, consistent with a lateral approximant.

Figure 6.1 The Chinese phrase *niu nai* '*milk*'in Standard Mandarin



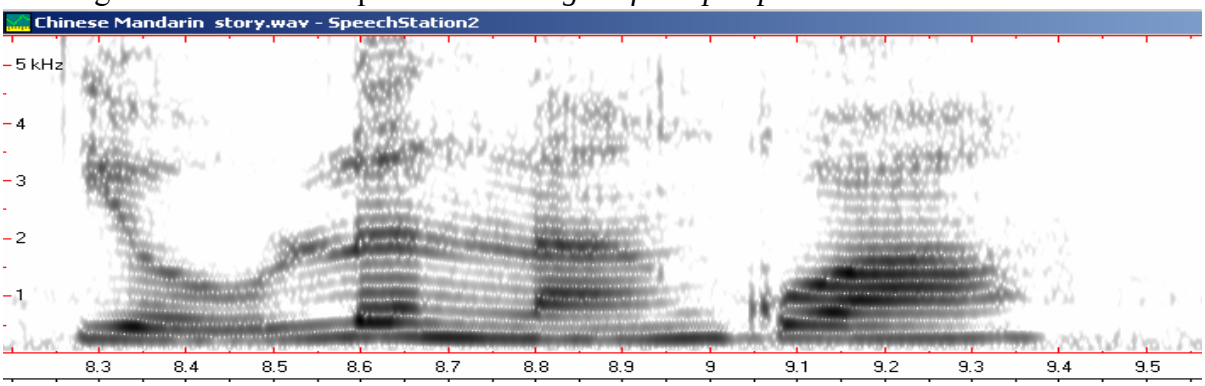

[ n u ɔː l a ɪ ː ]

Figure 6.2 The comparison spectrum of a Chinese phrase *niu nai* '*milk*'




When the speaker pronounces the Chinese phrase *nen nan gua* '*fresh pumpkin*' from the story, she produces as [l e nl æ n k u a ]. The spectrogram (Figure 7 below) shows this pronunciation, but one point needs to be highlighted, which is that the author hears a nasal sound after the vowel [e], although the spectrogram does not show it clearly. The second syllable-initial realisation of /n/ as [nl] is most likely caused by the context. In the data, the speaker does pronounce [n] sound correctly when it is in the coda. In the Chinese phrase *nen nan gua* '*fresh pumpkin*', the speaker

Figure 7 The Chinese phrase *nen nan gua* '*fresh pumpkin*' in Standard Mandarin




[ j ou l e nl æ n k u a ]

does pronounce the second [n] in the word *nen*. This might be the influence on the initial consonant of the following word *nan*. That is to say, the final consonant of the first word is probably assimilated so that it forms a double consonant with the initial consonant of the second word. This indicates that the positioning of [n] or [l] at a word boundary and the effect of the following consonant may be a contributing factor. More investigation needs to be done to confirm this hypothesis.

<u>English</u>

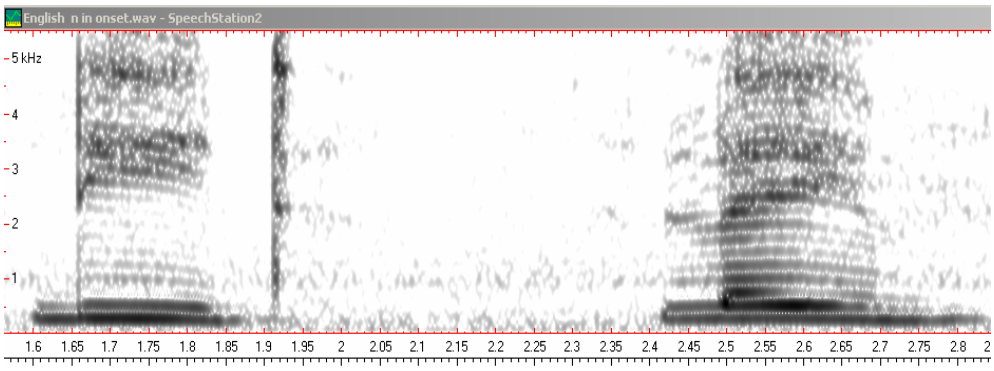
The realizations of syllable-initial /n/ in English speech are more complex than in Standard Mandarin and Sichuan dialect according to the data. Four phonetic realizations of /n/ are found in English speech of the speaker (See Table 6 below).

Table 6. Realizations of syllable-initial /n/ in English

| | /n/ →[n] | /n/→[l] | /n/→missing | /n/→[l̃n̆] |
|---|---|---|---|---|
| The speaker | 1 | 8 | 2 | 1 |

There are two points need to be noted. The first is that the speaker does produce the nasal [n] in the word *need*. This is the only word in the English speech data where the speaker produces [n] in the onset. Figure 8 (below) shows the spectrogram of two English words *need* and *name* pronounced by the speaker. We can clearly distinguish these two consonants are [n] and [l] by their energy distribution patterns.

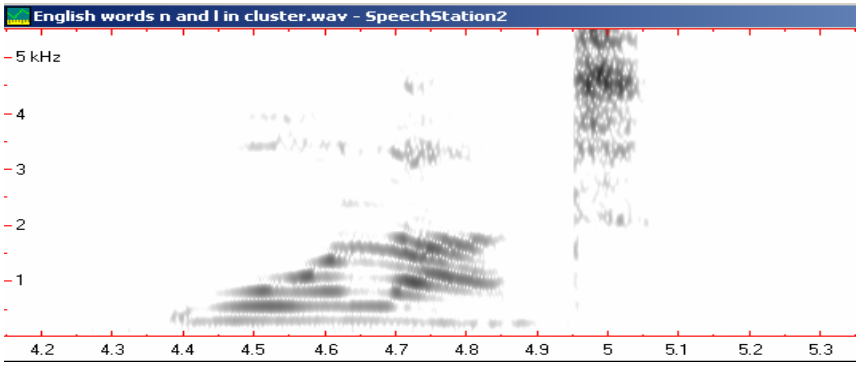
Figure 8 The English words *need* and *name*




[ n i: d ] [ l eɪ m]

The second point is that the speaker pronounces [n] and [l] correctly in English words with /-nl-/ consonant sequences, such as *unless*, *only*, and *unlike*. But when the English words have /-ln-/ consonant sequences, she does not pronounce them accurately. For example, she misses the nasal [n] in the word *walnut*, and pronounces it as [w ʊo l a t ʰ] in the English speech data (see Figure 9 below).

Figure 9 The English word *walnut*




[ w ʊ o l a t ʰ ]

Another word *naturalness*, occurs twice in the data, and each time the speaker has a different production for the first [n]— the first time she pronounces it as [lñ] (see Figure 10.1, below), and the second time she pronounces it as[l] (Figure10.2, below). In Figure 10.2 which shows her second production, although the author hears the [l] sound, there is no spectrographic evidence of a lateral approximant. This demonstrates that the speaker pronounces this word variably. Another point is that the speaker can not pronounce [n] sound in the consonant sequence /-ln-/, she omits the nasal sound.



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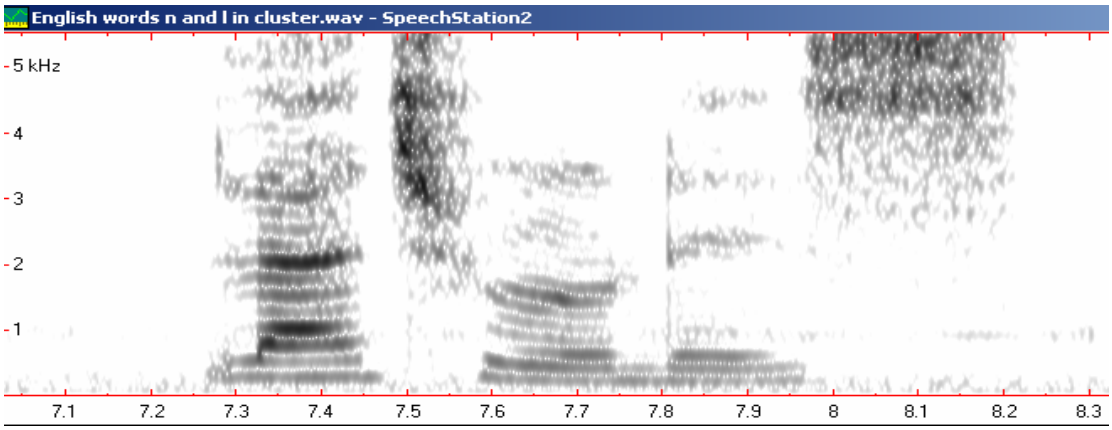
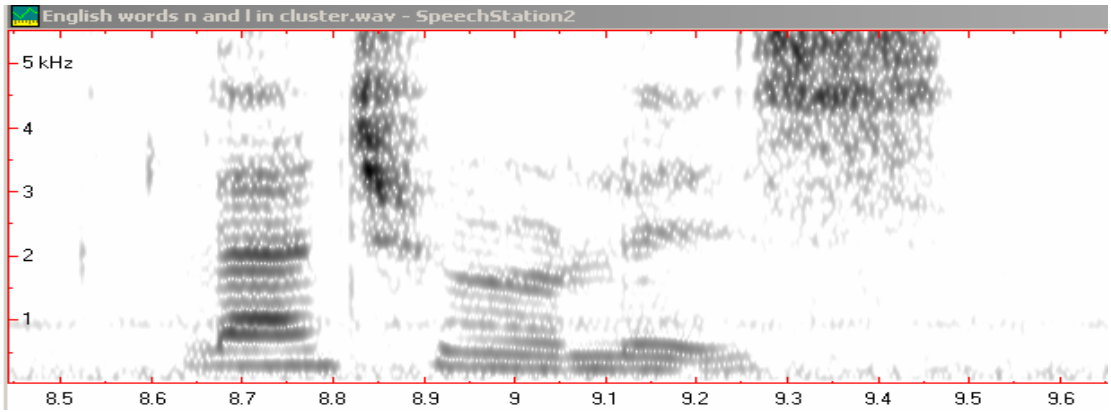
Figure 10.1 The first production of English word *naturalness*




[ lñ̃ æ tʃ ə: l ɛ sː ]

Figure 10.2 The second production of English word *naturalness*

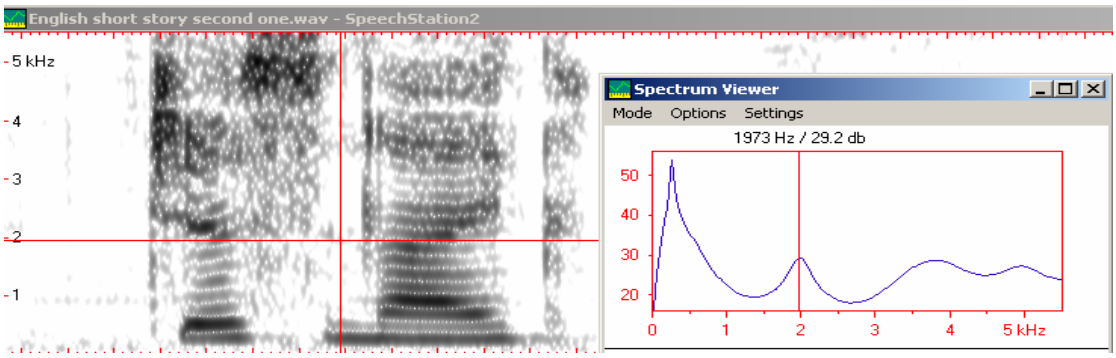



[ l æ tʃ ə: l ɛ sː ]

**4.3 Substitutions of [l] for [n] in Standard Mandarin, Sichuan dialect and English**

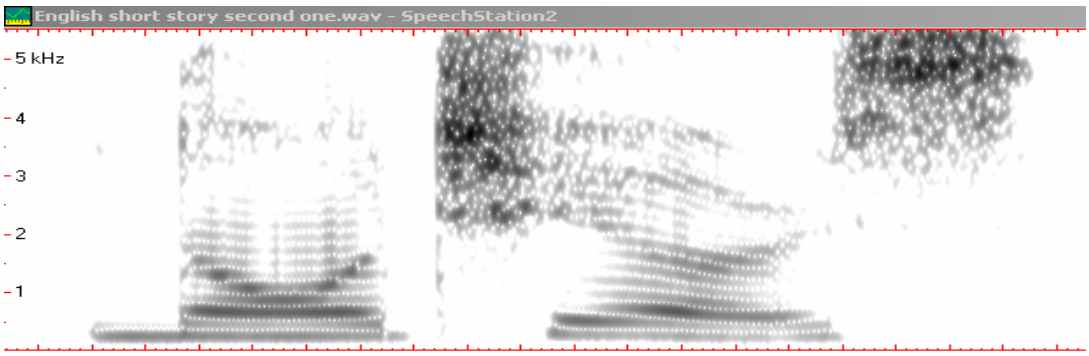
Compared with the realization of /n/ as [l], the instances of realizations of /l/ as [n] are fewer. Only two tokens are identified and they only occur in the speaker's English speech, in syllable-initial contexts, in this study. The speaker pronounces *like* as [n a ɪ $k^h$ ] and *lawn* as[n ɔ:n](See Figure 11 and 12 below).

Figure 11 The spectrogram *like* and the spectrum /n/




[ n a ɪ k$^{h}$ ]

Figure 12 The spectrogram *lawn chairs*




[ n ɔ: n tʃ j ə s ]

**4.4 Free variation or not?**

Free variation 'refers to the substitutability of one sound for another in a given environment, with no consequent change in the word's meaning' (Crystal, 2003:188). Findings in the previous two sections suggest the syllable-initial /n/ tends to be pronounced as [l], while syllable-initial /l/ is still pronounced as [l] except for the words *like* and *lawn*. In addition, the syllable-final /n/ and /l/ are always pronounced as [n] and [l] respectively. The two segments are not actually in free variation for the speaker. In order to further support this point, the pronunciations of repeated words of this speaker are examined. Table 7.1 and Table 7.2 below show the phonetic realizations of syllable-initial /n/ and /l/ in all the repeated words with varied pronunciations in the speech example of Sichuan dialect and English. Standard Mandarin samples have the same pattern as the Sichuan dialect samples.

Table 7.1 Variant realizations in Sichuan dialect speech of /n/ and /l/[3]

| Words | as [n] | as [l] | as [nl] |
|---|---|---|---|
| ‘nai’ | | 8 times | |
| ‘nan’ | | 2 | 1 |
| ‘nei’ | | 3 | |
| ‘na’ | | 2 | |
| ‘nen’ | | 2 | |
| | | | |
| ‘lan’ | | 3 | |
| ‘lao’ | | 6 | |
| ‘lai’ | | 6 | |
| ‘lang’ | | 4 | |
| ‘le’ | | 3 | |

Table 7.2 Variant realizations in English speech of /n/ and /l/

| Words | as[n] | as[l] | as[lñ] | segment omitted |
|---|---|---|---|---|
| need | 2 times | | | |
| name | | 2 | | |
| naive | | 2 | | |
| never | | 3 | | |
| wal**n**ut | | | | 2 |
| **n**aturalness | | | 1 | 1 |
| natural**n**ess | | 2 | | |
| vul**n**erable | | | | 2 |
| | | | | |
| un**l**ess | | 2 | | |
| on**l**y | | 2 | | |
| un**l**ike | | 2 | | |
| like | 1 | 2 | | |
| letter | | 2 | | |
| lie | | 2 | | |
| naturalness | | 2 | | |

If the two segments [n] and [l] were indeed free variants for this speaker, the frequency of [n] and [l] occurring in her speech would have been random. The distributions shown in Table 7.1 and 7.2 above are not random. Among the /n/-initial words, only the Chinese word *nan* and the English word *naturalness* were found to have random pronunciation. The other words in this category were pronounced with the [l]-like segment. The /l/-initial words were frequently pronounced accurately, but realization of /l/ as [n] in *like* did occur once.

[3] The empty cells in Tables 7.1 and 7.2 mean no realization.



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In short, evidence from this part demonstrates that free variation of syllable-initial [n] and [l] is not an appropriate description for this speaker. The term is not suitable because /n/ and /l/ are two different phonemes in Standard Mandarin because they can signal different meanings. For instance, in Standard Mandarin, the word *nan* does not mean the same thing as *lan*. The difference between the two words is said to be semantically contrastive. In addition, in Standard Mandarin, /n/ may occur at the beginning of words, or at the end of words; /l/ only occurs at the beginning of words. This speaker does not pronounce a segment [n] accurately for the /n/-initial Standard Mandarin words. She realized initial /n/ as [l] most of time; as a result, the meaning of the words is changed. Furthermore, the same phenomena also appear in the English data, that is to say, /n/ and /l/ are also different phonemes in English. Both /n/ and /l/ can occur in initial, medial, and final position where they serve to distinguish between meanings of words.

**5. Discussion**

The alternations of [n] and [l] in this study are only found in syllable-initial position. The alternation patterns demonstrate the direction of a one-way merging in Sichuan dialect rather than a random substitution. It shows that there is no enough evidence to prove that [n] and [l] are free variation (Ma & Tan, 1998:80). In addition, the same phenomena also occur when the speaker speaks in Standard Mandarin and English. Because Sichuan dialect is the first spoken language the speaker acquires, we can see strong evidence of L1 language transfer in this speaker.

In addition, two words *niu* and *need* need to be considered; these are the only words the speaker pronounces correctly among all syllable-initial /n/ words in the data. It seems that the speaker can pronounce an [n] sound when it is followed by a high vowel, and she pronounces an [l]-like sound instead of an [n] sound when it is followed by a non-high vowel. Maybe it is in complementary distribution which refers to 'the mutual exclusiveness of a pair of sounds in a certain phonetic environment' (Crystal, 2003: 89) for this speaker, but it needs more investigation. And if it is complementary distribution, they are realizations of the same phoneme. The evidence therefore is that in the speech of this speaker, there is no phonemic distinction between [l] and [n]. This is likely to lead to misunderstandings in Standard Mandarin, and also in English.

According to Wang, Sichuan-dialect-speaking EFL learners pronounce *late*: [leit] as [neit] (1994:57). This phenomenon only occurred twice in this study. Most syllable-initial [l] words are pronounced correctly. This observation requires further study.

The limitation of the present study is that it is only a case study and does not have many tokens available for analysis. Besides, the data are not from spontaneous speech. It is not possible to make general claims about this phonetic phenomenon.



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## 6. Conclusion

This study has explored the alternation patterns of [n] and [l] in Sichuan dialect, Standard Mandarin and English via a case study. The data shows that this alternation occurs in the syllable-initial [n] in Sichuan dialect, Standard Mandarin and English rather than in the syllable-initial [l]. The same phenomena do not appear in the syllable-final [n] or [l]. The data and analysis provided in this study demonstrate the alternations are not free variation as some of literature has been assumed. However, since it is only a case study, more speakers need to be examined in a future study.

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## Appendix 1[4]

The Chinese materials:

1. /n/ in onset
   Niu nai  Nan fang  Tou nao  Guo nei  Nai fen
   /n/ in coda
   Wai bein  An quan
2. /l/ in onset
   La che  Lai hui  lang  Lan hua  Lao lao
3. Phrases both have /n/ and /l/ in coda or onset
   Na lai  Nen lu  Lao ban

4. Short story

Cong nan bian lai le yi ge lao nai nai, you shou na zhe yi ge lan zi, lan zi nei zhuang zhe yi xie qing cai, you nen nan gua, ganju, gan lan deng. Zou dao yi ge you lang gan de da men kou, kan dao yuan nei you yi zhi lang gou, xing tai hen wei meng, lao nai nai yong guai gun zhi le ta yi xia, biao shi zan shang. Lang gou yi wei yao da ta, tu ran jian tiao le chu lai, ba lao nai nai xia le yi tiao, han le yi sheng, hai hao, lang gou bei zhu ren ji shi huan le hui qu, suan shi xu jing yi chang.

## Appendix 2[5]

The English materials:

1. Words
   /n/ in onset: need  name  naïve
   /n/ in coda: son  return  spoon
2. Words
   /l/ in onset: like  letter  lie
   /l/ in coda: spoil  real  ill
3. Words /n/ and /l/ in cluster
   Walnut  naturalness  vulnerable  unless  only  unlike
4. Short story

[4] The underlining words in a short story are words with [n] or [l] in syllable-initial and syllable-finial.
[5] The underlining words in a short story are words with [n] or [l] in syllable-initial and syllable-finial.

When I think about it, I've been going to Camp Meeting every year since I was born, just like Gramma, but fourteen years just isn't the same as sixty-one. Grampa never went to Camp Meeting when he was young, the year he met Gramma was his very first time. And he was just visiting a friend. So you never can tell what might happen.
Mumma and Brian aren't staying overnight this year. Mumma says it's too hot for little Kinsey, that she would get heat rash. Gramma fusses about that, too. "It's just for two weeks," she grumbles. "You'd think that for fourteen days out of the whole year, a person could go without their air conditioning. Lord knows, we all got along under more primitive conditions than this when I was a girl." She adds lawn chairs and camera film to her list. "We never get a chance to talk any more."
Mumma and Brian just say they have to work and they'll come out in the evenings. I'll help Gramma hold down the fort. I don't mind being the only one. It's hard on her, I know, to be away from Grampa. They've never been apart before.



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