

Lao Khrang and Luang Phrabang Lao: A Comparison of Tonal Systems and Foreign-Accent Rating by Luang Phrabang Judges

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1. Introduction

‘Lao Khrang’ refers to a group of ethnic-Lao citizens of Thailand who were originally from a mountainous area known as Phu Khang in Luang Phrabang² Province, Lao PDR. (Mayuree and Em-On 2005: 5, Chai Nat Chamber of Culture n.d.: 12–13). There are several groups of Lao Khrang (LK)³ in Thailand, each of which migrated at different periods of time, and to different provinces. Currently, the majority of LK people reside in the upper provinces in central and western parts of Thailand such as Phetchabun, Kanchanaburi, Kamphaeng Phet, Chai Nat, Tak, Uthai Thani, Phitsanulok, Ratchaburi, Sukhothai, Uttaradit, Phichit, Nakhon Sawan, Suphan Buri, Nakhon Pathom, and Lop Buri (Mayuree and Em-On 2005: 8). According to Chen (2000: 1) most of the Lao minorities in Thailand came from what are now Luang Phrabang and Vientiane provinces in the Lao Peoples Democratic Republic (Lao PDR), beginning with the reign of King Taksin over 200 years ago. Mayuree and Em-On (2005: 6–7) state that historical documents from the reign of King Buddha Loetla Nabhalai (King Rama II) recorded at least two periods of migration by LK people. One was during the reign of King Taksin in 1778 AD, and the other was in 1791 AD. It has been well documented that the LK people were forced to leave their home town in Luang Phrabang and nearby areas as prisoners of war in both periods. Today, several large communities of LK in Thailand still maintain their ethnic Lao identity through language and culture. In particular, they believe that offering their hand-woven clothes to the spirits of their ancestors will bring them a peaceful life. This form of traditional weaving has always been part of their LK rituals and culture (Srisombut, Chantachon, and Koseyayothin 2011: 595). According to the Chai Nat Chamber of Culture, Ministry of Culture, Thailand (Chai Nat Chamber of Culture n.d.: 1-8), the word ‘Khrang’ probably comes from the name of their homeland. Another explanation is that ‘Khrang’ comes from the word for a particular insect called ‘khrang’ used to produce dye for woven fabric, a traditional handicraft, which has been passed down from generation to generation. Because the LK people apparently came from the area around Luang Phrabang, Laos, I am particularly interested in investigating the tonal systems of these two dialects, LK and Luang Phrabang Lao (LPL),⁴ to determine their linguistic proximity, and to conduct a study of foreign-accent rating to determine their perceptual proximity. The first step was to analyze the LK tonal system spoken in Ban Kut Chok, Nong Mamong District, Chai Nat Province, Thailand, and that of LPL spoken in Ban Xiang Man, Chom Phet district, Luang

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² Throughout this paper, the transliteration from Thai to English will be based on the system implemented by the Royal Institute of Thailand (http://www.royin.go.th/upload/246/FileUpload/416_2157.pdf). Likewise, the transliteration from Lao to English will be based on the same system, except for some alphabetic consonants in Lao that have been conventionally used among Lao people. These are <v> for ວ ວີ /v/, <s> for ສ ສີອ /s/, and <x> for ຊ ຊີງ /s/. There is no /r/ or /l/ within consonant clusters in Lao. But, <Phrabang> will be transliterated instead of <Phabang> following the Royal Institute of Thailand.

³ LK stands for ‘Lao Khrang’. This abbreviation will be used throughout this paper, except when it is mentioned in the sub-headings.

⁴ Henceforth, Luang Phrabang Lao will be referred to as LPL, except when it is part of the sub-headings.

Phrabang Province, Lao PDR. Both tonal systems were compared in terms of their split and merger patterns as well as their phonetic characteristics. Second, LPL speakers were asked to listen to forty sentences uttered by three LK speakers, four LPL speakers, and one Salavan (SLV)⁵ speaker. The purpose of this rating test was to investigate how LPL speakers would rate the LK accent with reference to the degree of native versus non-native accent.

There has been a lot of research on Lao dialects spoken in Thailand that described their tonal systems and place of origin. For example, Tanprasert (2003: 1) studied the tonal systems of Phuan⁶ spoken in Thailand, and indicated that the Phuan people were originally from Xiang Khwang, Laos, though without any further discussion on the relationship between the Phuan groups in Thailand and those of Laos. Likewise, Jinda (1986: 36), Wilailuck (1987: 7), Chen (2000: 1), and Siwaporn (2000: 94) studied the LK tones of different areas in Thailand. All of them stated that the LK people were from Phu Khang in Luang Phrabang, but there was no further investigation of the similarities and differences between these two dialects—LK in Thailand and LPL in Laos. Recently, several research papers have compared the tonal systems of a minority language in Thailand with the language spoken by residents of the dialect's place of origin. For example, Somsong (2013: 32–38) studied the tonal systems of Tai Dam dialects spoken in Thailand and compared them with those currently spoken in Vietnam. Nevertheless, such comparisons were conducted with a focus only on speech production. Such evidence from acoustic analysis can only provide us with information on the speech production of the two dialects being compared, but it does not give us information about how speakers of one dialect perceive, and are perceived, by others. The second objective of this study is therefore to test the rating of LK speech by LPL listeners, providing preliminary data that reveal how LPL speakers feel about the LK speech accent, given the fact that the two varieties of Lao were assumed to derive from the language spoken by descendants of the same Lao group. The study of both tonal production and perception can enhance our knowledge of linguistic ties between these two speech communities, which have had no contact with each other during two hundred years of physical separation.

2. Literature Review

This review focuses on two aspects of my analysis: the phonology of LK and LPL and foreign-accent rating studies. First, I review previous studies on the consonants, vowels, and tones of LK spoken in different provinces in Thailand, as well as previous studies on the tonal systems of LPL. Second, I will discuss the methodology for rating foreign accents that has been used (mostly) for assessing English, but which is relevant to this research.

2.1. Previous studies on phonology of Lao Khrang and Luang Phrabang Lao

2.1.1. Lao Khrang

Like any Lao dialects, LK, as spoken in different provinces,⁷ (e.g., Tha Tako district, Nakhon Sawan Province (Wilailuck 1987), Don Tum district, Nakhon Prathom Province

⁵ Salavan, henceforth SLV, is a province in Southern Laos. Its adjacent provinces are Savannakhet in the north, Cham Pasak in the south, and Xekong in the southeast.

⁶ Phuan is a group of Tai speakers residing in Xiang Khwang, Lao PDR (Tanprasert 2003: 1). Brown (1985: 143) described it as a dialect genetically close to Shan, Northern Thai, and Central Thai, whereas Chamberlain (1975: 50) classified it to be the same subgroup as, for example, Siamese, Phu Tai, and Neua.

⁷ The place names of the previous studies will be spelled in accordance with the spelling system used in this paper.

(Jinda 1986), Dan Sai district, Loei Province (Siwaporn 2000), and Mueang district, Nakhon Sawan Province (Chen 2000), has twenty consonant phonemes. They are /p,t,k,ʔ,p^h,t^h,k^h,b,d,c,f,s,h,m,n,ɲ,ŋ,l,w,j/. There are nine short vowels: /i,e,ɛ,u,o,a,ɯ,ɤ,ɔ/ and their nine long-vowel counterparts /i:,e:,ɛ:,u:,o:,a:,ɯ:,ɤ:,ɔ:/, making eighteen vowels all together. Chen (2000: 19) reports that LK lacks /ɯa/; only two diphthongs: /ia/ and /ua/ were found. Similar to Chen's findings, my data indicate that LPL /ɯa/ always corresponds to /ia/ in LK of Ban Kut Chok. For example, LPL /sɯa4⁸/ - LK /sia4/ 'shirt', LPL /mɛ:ŋ2.kaʔ5.bɯa5/ - LK /mɛ:ŋ2.kaʔ3.bia5/ 'butterfly'. Brown (1985: 139) proposed that a proto-diphthong *ɯa has become /ia/ in Lao as spoken in Nan Province as well as other dialects that he did not specify.

LK has five tones emerging from the same syllable structures and proto-Tai tones as specified by Gedney's tone box.⁹ The tone shape and height vary slightly across regions. Table 1 shows a comparison of the tonal systems in different areas in Rows A, B, and C, and Table 2 presents tonal variants in Rows DL and DS:

Five tones	Song Phi Nong district, Suphan Buri (Suwattana and Kantima 1996)	Tha Tako district, Nakhon Sawan (Wilailuck 1987)	Don Tum district, Nakhon Pathom (Jinda 1986)	Sangkha Buri district, Kanchanaburi (Phinnarat 2003)	Na Haeo district, Loei (Siwaporn 2000)
Tone 1 (A1)	High-Falling-Rising /424/	Mid-Falling-Rising /324/	Mid-Falling-Rising /313/	Mid-Falling-Rising /312/, /323/, Low Level-Rising /224/, High-Falling-Rising /423/	Low-Falling-Rising /214/
Tone 2 (A234)	Mid-Rising /34/	Low-Rising-Falling /232/	Low-Rising-Falling /243/, Low-Rising /23/	Low-Rising-Falling /232/, Low-Rising /23/, Mid-Falling-Rising /323/	Mid Level /33/
Tone 3 (B1234)	High Level /44/	High Level /44/	High Level /44/	Mid Level-Falling /332/, Mid-Falling /32/, Mid Level /33/, Low Level /22/	High Level /55/, Mid-Rising /35/
Tone 4 (C1)	High-Rising-Falling /452/	Mid-Rising-Falling (Glottalized) /342ʔ/	Mid-Rising-Falling /343/	Mid-Rising-Falling /354/, /342/, Mid-Rising /35/, High Level-Falling /442/	Low-Falling /21/
Tone 5 (C234)	Mid-Rising-Falling /354/	High-Rising (Glottalized) /45ʔ/	Mid-Rising /345/	High Level-Falling /443/, Mid Level /33/, High Level /44/, Mid-Rising /34/	High-Rising-Falling /453/

Table 1: The five tonemes of LK in different areas based on previous studies.

⁸ The number written after the transcription of each syllable refers to the tone (see Table 5 for LK tonal system and Table 6 for LPL tonal system).

⁹ Gedney's tone box consists of twenty boxes divided by five columns and four rows. The columns represent five proto-tones called Tone *A, *B, *C, *DL, and *DS, while four rows are divided into voiceless friction sounds, voiceless unaspirated stops, glottal, and voiced sounds. The tone box was proposed on the assumption that the Thai writing systems reflect Proto Tai tones *A, *B, *C, and *D (Gedney 1989: 195-196). That is, Proto-Tai Tone *A was written with no tone marker, Mai-Ek tone mark represents Tone *B, while Mai-Tho tone mark represents Tone *C. Tone *D was found in checked syllables with no tone mark. See Gedney (1989) for further details.

Five tones	Song Phi Nong district, Suphan Buri (Suwattana and Kantima 1996)	Tha Tako district, Nakhon Sawan (Wilailuck 1987)	Don Tum district, Nakhon Pathom (Jinda 1986)	Sangkhla Buri district, Kanchanaburi (Phinnarat 2003)	Na Haeo district, Loei (Siwaporn 2000)
DL123	Tone 1	Tone 4	Tone 5	Tone 4	Tone 4
DL4	Tone 3	Tone 5	Tone 2	Tone 5	Tone 5
DS123	Tone 4	Tone 1	Tone 1	High Level /44/, High-Falling /43/, /42/, Mid Level /33/	Tone 1
DS4	Tone 5	Tone 3	Tone 3	Mid Level /33/, High Level-Falling /443/, High Level /44/, Mid Level /33/	Mid-Rise /34/

Table 2: The tonal variants of LK in different areas based on previous studies.

As can be seen in Tables 1 and 2 above, four out of five LK varieties show similar tone shapes and pitch height. For example, in Tone 1 (A1), all varieties have a falling-rising shape. In Tone 4, all tone systems except that of the Na Haeo district, Loei have a rising-falling contour although they differ in pitch height. In addition, variations can be seen in Tone 5; rising-falling in Song Phi Nong, Suphan Buri and Na Haeo district, Loei, whereas different tonal variants were found in other regions.

2.1.2. Luang Phrabang Lao

Research studies on Lao spoken in Luang Phrabang are rare. Siwaporn (2000) compared the phonological systems (consonants, vowels, and tones) of a Lao community who called themselves ‘Lao Dan Sai’ in the Na Haeo district, Loei Province, and an LPL variety spoken in Ban Pak Sueang, a small community located on the Thailand-Laos border right next to Loei Province. She found that these two villages both speak Lao dialects which have twenty consonant phonemes. She proposed eighteen monophthongs /i, i:, e, e:, ε, ε:, i, i:, θ, θ:, a, a:, u, u:, o, o:, ɔ, ɔ:/ and three diphthongs /ia, ia, ua/ (Siwaporn 2000: 47). These phonemes are similar to the other dialects as described in LK. My data, collected in the Mueang district of Luang Phrabang, also show twenty consonants and eighteen monophthongs (nine short vowels and their long-vowel counterparts resembling those proposed by Siwaporn). However, there are four diphthongs: /ia/, /ua/, /ɯa/ and /aɯ/ instead of three. The diphthong /aɯ/ has been preserved from proto *aɯ, which has become /ai/ in most Lao dialects (Brown 1985:141). For example, /baɯ2/ ‘leaf’, /haɯ4/ ‘give’, /caɯ2/ ‘heart’, /naɯ2/ ‘in’, compared with /bai2/, /hai4/, /cai2/, and /nai2/ in other Lao dialects.

In terms of the tonal system, Roffe (1956) proposed five tones as shown in Gedney’s tone box in the following table:

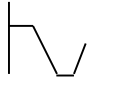



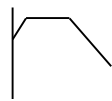




Class	A	B	C	DL	DS
High	Tone 1: Up-Down Glide 	Tone 3: Mid 	Tone 4: High-Falling (Glottalized) ¹⁰ 	Tone 2: Low 	Tone 4: High-Falling 
Mid	Tone 2: Low-Rising 		Tone 5: High 		Tone 5: Mid-Rising 
Low					

Table 3: Five tones in Luang Phrabang proposed by Roffe (1956) (adapted from <http://www.seasite.niu.edu/lao/>)

In Roffe’s tone box description, the class of consonants is divided into three categories: High, Mid, and Low, unlike most of the Lao tone boxes described by Thai linguists, which usually comprise four types as in Gedney’s Tone Box: one High, two Mids (pre-glottalized and non-preglottalized initials), and one Low category. According to Roffe, Tone 1 in Box High-A is ‘Up-Down Glide,’ which I interpret as Mid-Falling-Rising according to its tone shape. Tone 2 in Boxes Mid- and Low-A is Low-Rising. Tone 3 in all of column B is Mid Level. Tone 4 in Box High-C is High-Falling with glottalized ending. Last, Tone 5 in Boxes Mid- and Low-C is a High Level tone. The tones in boxes DL and DS are allotones of the main five tones. That is, Tones in Classes High and Mid of column DL are allotones of Tone 2. Box Low-DL is an allotone of Tone 5. Boxes High- and Mid-DS are allotones of Tone 4. Last, Box Low-DS is an allotone of Tone 3.

Ten years after Roffe’s proposal, Brown (1965) described the five tones in LPL as indicated in the tone box below:

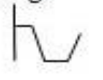

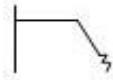
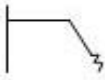




Class	A	B	C	DL	DS
High	Tone 1: Mid Falling Rising 	Tone 3: Mid 	Tone 4: High-Falling (Glottalized) 		Tone 5: Mid-Rising 
Mid	Tone 2: Low-Rising 		Tone 5: Mid-Rising (Glottalized) 		
Low					Tone 3: Mid 

Table 4: Five tones in Luang Phabang Lao proposed by Brown (1965) (adapted from <http://www.seasite.niu.edu/lao/>)

¹⁰ Neither Roffe (1956) nor Brown (1965) use parentheses for this word (Glottalized) in their Tone Charts in contrast with the chart depicted at www.seasite.niu.edu/lao and used here.

Tones in LPL described by Brown were similar to Roffe's, except for Tone 5 in Boxes Mid and Low C; Roffe proposed a High tone while Brown's was a Mid-Rising (Glottalized) tone. In addition, Tone DL in Boxes High and Mid in Roffe's table was a Low tone but High-Falling (Glottalized) in Brown's. Tone DS in Boxes High and Mid in Roffe's was High-Falling but Mid-Rising in Brown's. In addition, Tone DL in Boxes High and Mid in Roffe's has merged with the Low-Rising tone or Tone 2 in Boxes Mid and Low A, but the counterpart tone in Brown's has merged with the High-Falling (Glottalized) tone in Box High-C. My initial finding for the tones of LPL was closer to Brown's, except for Tone 1, which I will explain in detail in Section 4.2.

2.2. Foreign-Accent Rating

Studies of how native speakers of a language rate the foreign accent of non-native speakers of that language have been conducted for over thirty years. Most studies on foreign-accent rating have been done by James Emil Flege or by Flege and his research team. For example, Flege (1984) studied how English native speakers rated the English accent of French speakers. Flege and Fletcher (1992) examined the English accents of native Spanish and Chinese speakers with varied lengths of residence in the United States. Another example of research on foreign-accent rating is from Flege, Frieda, and Nozawa (1997). They conducted a study of Italian speakers' English accents rated by native English speakers. From my observation, it is usually the language accent of English that has been rated, with speech samples collected from non-native English learners from both Europe and Asia. In rating foreign accents, researchers used different kinds of scales for listeners to judge speech samples. One of the most popular scales that has been widely used in such studies is the Likert scale,¹¹ in which one end of the scale indicates 'no foreign accent' while the other end indicates 'extremely/very heavy foreign accent' (Jesney 2004: 2). Jesney (2004: 2–3) explains further that there are no fixed points for Likert scales. That is, the scales could range from three to ten points, depending on how researchers design their methodology. Furthermore, tokens or stimuli provided for listeners can range from one syllable to a speech sample of two minutes, and the type of stimuli can be either reading texts or extemporaneous speech.

These studies tend to focus on Second Language Acquisition (SLA), since the studies in question involve two (or more) different languages. In terms of dialectal studies, on the other hand, the question of whether two speech varieties are different languages or merely dialects of the same language is not always clear-cut. Siegel (2010: 1) has suggested that mutual intelligibility between two varieties is the main criterion used to determine whether two varieties are different languages. That is, if speakers of the two varieties can understand each other to a certain extent, they speak dialects of the same language. If, however, they cannot communicate with each other by using their own language, this means that they do not speak the same language.

Just like foreign-accent rating in SLA, researchers of Second Dialect Acquisition (SDA) are also interested in accent rating between dialects. Rating the accent of different dialects is usually one of several tasks that researchers of dialectology ask their respondents

¹¹ Allen and Seaman (2007) explained that Likert scales are a common rating format for surveys. Respondents are asked to assess how they would rank quality from high to low, least to most, best to worst, or how much they agree or disagree, for instance, using five or seven levels. See Appendix II for the five-point Likert scale used in this research.

to do.¹² Apart from different-accent rating (the degree in which the dialect accent in question resembles one's own), these tasks include correctness rating—the degree to which the dialect accent in question is completely correct/incorrect (Demirci and Kleiner 1999: 263–281, Hartley 1999: 315–332), pleasantness rating—the degree to which the dialect accent in question is pleasant to hear (Demirci and Kleiner 1999: 263–281, Hartley 1999: 315–332, Coupland, Williams, and Garrett 1999: 333–343), dynamism—the degree to which the dialect accent in question is lively (Coupland, Williams, and Garrett 1999: 333–343), and prestige—the degree to which the dialect accent in question is prestigious or well-spoken (Coupland, Williams, and Garrett 1999: 333–343). The purpose of these tasks is to account for language attitudes—how respondents feel or perceive regional/social dialect(s) in question, rather than evaluating their speech accents per se. Although my research involves SDA, since it is a study of a perceived non-local (LK) accent rated by listeners of a different dialect (in this case LPL), a Likert scale, which is widely used in SLA, will be applied here and will be explained in the methodology section.

3. Methodology

The research methodology comprised three steps. First, I collected tonal data from LK informants. Second, the equivalent tonal data were collected from LPL informants. Then a tonal analysis was conducted from the data collected during the first and second steps. Next, LPL informants were asked to rate the degree of nativeness perceived from the utterances of LK speakers. This section is divided into four sub-sections that describe the data collection from both LK and LPL informants, tonal analysis, and foreign-accent rating.

3.1. Data collection from Lao Khrang informants

Informants were four female native speakers of LK, between the ages of 54 and 74, from Ban Kut Chok, Nong Mamong district, Chai Nat Province. They were asked to produce sixty monosyllabic words for recording (see Appendix 1). Each word was shown as a picture on a 4 x 7-inch card. The purpose of eliciting the data in this way was to study the tonal patterns and tone characteristics in citation form. Next, they were asked to produce another set of monosyllabic words beginning with an initial k^h -. These words were: (1) / $k^h a : 1$ / 'leg,' (2) / $k^h a : 2$ / 'stuck,' (3) / $k^h a : 3$ / 'galangal,' (4) / $k^h aw 4$ / 'rice,' (5) / $k^h a : 5$ / 'trade,' (6) / $k^h at 3$ / 'write,' (7) / $k^h at 4$ / 'scrub,' (8) / $k^h a : t 4$ / 'torn,' and (9) / $k^h a : t 5$ / 'fasten.'¹³ The informants were asked to say each word twice, providing 18 tokens all together. Nine flash cards representing these words were randomly shown to them twice. The data collection of these nine words helped analyze their acoustic characteristics when the initial consonants as well as the vowels were controlled. The informants' last task was to read five short sentences. These were:

- | | |
|---|----------------------------------|
| (1) / $k^h \text{ɔ} 4$ mi:2 ?a:j5 sɔ:ŋ1 k^h on2/ | 'I have two brothers.' |
| (2) / $k^h \text{ɔ} 4$ mi:2 k^h wa:j2 sɔ:ŋ1 to:2/ | 'I have two buffaloes.' |
| (3) /na:5 hen1 k^h wa:j2 ha:4 to:2/ | 'Uncle/Aunt saw five buffaloes.' |

¹² For example, Kuiper (2002: 247) asked his native French-speaking judges to rate 24 French dialects using a four-point Likert scale, ranging from Point 1 if you think that French in this region resembles your own, to Point 4 if the French spoken in this region is incomprehensible to you.

¹³ Obviously, this additional set of nine word lists does not cover each of the twenty tone boxes. However, they were adequate for showing the LPL tonal system as a whole, since they cover every type of syllable structure, and each of them is representative of one of the five tones.

- (4) /k^hɔj4 cep4 mu:2 la:j1/ ‘My hands hurt so bad.’
 (5) /mi:2 ʔa:j5 ha:4 k^hon2/ ‘(I) have five brothers.’

These five utterances were used as sentence stimuli when LPL listeners were asked to rate their accent. Each of these sentences were made up of as many tones as possible, so that judges could hear a wider range of tonal distribution.

3.2. Data collection from Luang Phrabang informants

I had five female native speakers of LPL, between the ages of 42 and 76. They were from Ban Xiang Man, Chom Phet district of Luang Phrabang Province. I have been told by many LPL people, including the residents of Ban Xiang Man themselves, that the people of Ban Xiang Man have had a very limited record of migration. They have lived there for several hundred years, relatively isolated; marriage across provinces or even districts, for example, has been rare. From their point of view, they have lived here for generations.

As with the LK speakers, LPL informants were asked to utter sixty monosyllabic words and a set of words beginning with an initial k^h- consonant, except for the word /k^hat2/ ‘scrub’ and /k^hat3/ ‘write,’ which do not exist in LPL. Arbitrarily, I chose /p^hat2/ ‘put on clothes’ and /nok3/ ‘bird’ to replace them.¹⁴ The informants were also asked to produce the same set of short sentences as controlled sentence stimuli for the rating evaluation.

3.3. Tonal Analysis

The tonal data from all informants were initially measured in Hertz, using the PRAAT 5.3.42 program. The duration was normalized and divided into five points: 0%, 25%, 50%, 75%, and 100%, respectively.¹⁵ The average F0 values were then converted into semitones in order to reduce each speaker’s phonetic variants as well as cross-speaker variation. The formula used for the conversion was $ST = 12 * \log (\text{Hertz to be translated} / \text{Hertz Reference}) / \log(2)$.

¹⁴ I had not expected to find that the words /k^hat2/ ‘scrub’ and /k^hat3/ ‘write’ did not exist in LPL. The acoustic results from the word /p^hat2/ ‘put on clothes’ should not differ much from those of the word /k^hat2/ ‘scrub’ since the initial k^h- and p^h- were both voiceless aspirated plosives differing only in the place of articulation. On the other hand, the word /nok3/ ‘bird’ was obviously not the best candidate as a replacement for /k^hat3/ ‘write,’ since the initial consonants and the vowels were of different categories. It should be noted, therefore, that the pitch patterns of the latter word might deviate from /k^hat3/ ‘write,’ and might affect the reliability of the acoustic analysis even if the starting point of tonal measurement was at the onset of the vowel.

¹⁵ Several Thai scholars, such as Phinnarat (2003), divided the duration of each normalized rime into ten points for tonal measurement. However, Abramson (1962) measured Thai tones in raw curves at every twenty-five milliseconds for ‘rapidly moving stretches’ and at every fifty milliseconds or more for ‘slowly moving stretches and level portions’ (Abramson 1962: 115). The intervals of twenty-five milliseconds were therefore minimally appropriate for tonal measurement from one point to another. Abramson also normalized the raw curves of his tonal data by ‘shrinking or stretching the curves proportionally to a convenient length’ (Abramson 1962: 119). The difference in tonal measurement methodology between Phinnarat and Abramson may be due to the objectives of their tonal analysis. Phinnarat aimed at measuring tone curves of different syllable structure: smooth (i.e., syllables ending with sonorants, long vowels or diphthongs) and checked (i.e., syllables ending with stops), while Abramson investigated tone curves of single vowels and double vowels in Thai, disregarding whether the final consonants ended in sonorants or stops. In this research, the average duration of rimes was no longer than thirty-three milliseconds. When divided into five points, the interval between each and every point was between five to ten milliseconds. Therefore, tonal measurement at five points should be adequate to show the accuracy of the pitch contour of each tone.

To illustrate how each tone was labeled, Figure 1 (below) offers a sample of how a tone would be described:

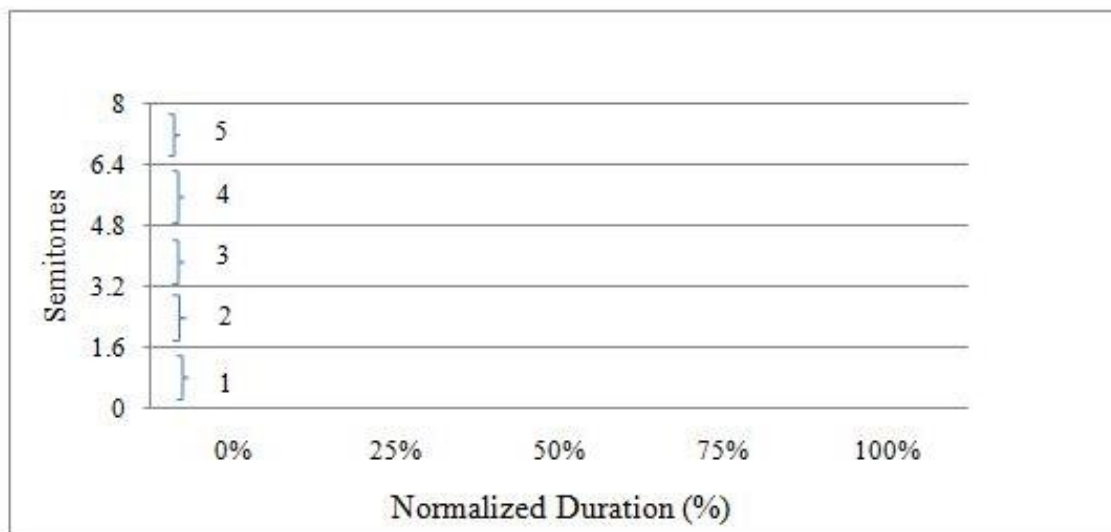


Figure 1: Sample of Tonal Description

In each tonal figure, there are six horizontal lines, each of which represents the height of the tone ranging from 0–8 semitones at each point of normalized duration.¹⁶ The semitones are then converted into Tone Numbers 1–5, as shown, between each line according to its position. Numbers 1 and 2 would be called Low, Number 3 Mid, and Numbers 4 and 5 High.

Foreign-Accent Rating

Forty-one LPL speakers,¹⁷ all females, acted as judges to rate the speech of LK speakers. They were mostly gardeners and farmers whose education did not go beyond graduating high school. They were between 15 and 80 years old¹⁸ from Ban Muang Kham,¹⁹ Chom Phet district, Luang Phrabang. Because of the wide range of ages, the judges were divided into three groups based on generation: ages 15 to 24 were the young generation (YG), ages 25 to 44 were the middle generation (MG), and ages 45 to 80 were

¹⁶ The range of values for semitones is not fixed, depending on the average ranges within each group of informants. As can be seen from Figures 4 and 5, for example, the semitones range from 0–10.

¹⁷ Originally, forty-two judges participated in the rating. However, one of them was ruled out because her listening ability to rate controlled LPL and SLV sentences was considerably limited. Further explanation is provided in Section 5 and Appendix III regarding the judges.

¹⁸ The reason for having such a wide range of ages was that in such a secluded village as the one where data were collected, it was unpredictable to what extent I could get cooperation from the people. Since it was hard to control the background of the judges, including the age range, I tried to have as many judges as possible in order that the corpus would be adequate for statistical analysis. The youngest judge (15 years old) and the oldest one (80 years old) were qualified judges because they could identify the Luang Phrabang and non-Luang Phrabang accents correctly with high scores.

¹⁹ Ban Muang Kham and Ban Xiang Man, where the tonal data were collected, are practically ‘twin’ villages; they are located right next to each other, within only about ten minutes walking distance.

the old generation (OG).²⁰ None of these respondents had a hearing impairment.²¹ The rating results from the three generation groups were compared and calculated statistically to see if their ratings had any significant differences. The judges were asked to listen to the forty sentence utterances produced by three LK speakers,²² with two sentences or 5.0% of all utterances from one Salavan speaker as control non-native stimuli,²³ and with eight or 20.0% of the total utterances from four LPL speakers as control native stimuli.²⁴ Each sentence was separated by a five-second pause. The judges were unaware of the speakers' language background. Their task was to assess the degree of native to non-native accent of these stimuli by using a five-point Likert scale, ranging from Number 1 "definitely native accent" (written in Lao as "This voice is definitely an LPL speaker") to Number 5 "definitely non-native accent" (written in Lao as "This voice is definitely NOT an LPL speaker"). The five-point scales were adopted based on the backgrounds of the raters. That is, since most of the participants were farmers and gardeners, they were not familiar with the complexity of such a paper task. Too many points might confuse them, leading to unreliable results.²⁵

4. Tonal Analysis of Lao Khrang and Luang Phrabang Lao

Sections 4.1 and 4.2 will briefly describe the tonal analysis. In Section 4.3, the tones of both varieties will be compared.

²⁰ This research was not originally aimed at investigating foreign-accent rating among judges of three different age groups. For this accent-rating section, the objective was to study how LPL listeners as a whole would rate the LK accent in terms of native versus non-native accent. The additional investigation of accent rating divided by age difference was later conducted after I noticed that the results of the accent rating for the LK3 speakers varied among the judges. As a result, the ages of the judges were not controlled, ranging from fifteen to eighty years old consecutively. Although the three age groups (the Younger Generation [YG], the Middle Generation [MG], and the Old Generation [OG]), were divided arbitrarily into groups between 15 and 24, 25 and 44, and 45 and 80 years of age respectively, I believe that this is the best decision for age division for the following reasons: (1) Although the oldest judge and the youngest judge of each group may be considered in the same generation (e.g., the oldest judge of YG was 24 years old while the youngest judge of MG was 26 years old), each group was considerably proportionate in number (15 judges for YG, 17 judges for MG, and 9 judges for OG). Grouping each generation in other ways would result in more imbalanced numbers of judges for each group. Moreover, the division between YG and MG was at 24–25 years, whereas the division between MG and OG was at 44–45 years, but there was no judge whose age was at the border of each group. Therefore, every judge clearly belongs to his/her most appropriate group. (2) It can be seen later in the discussion section that the results of accent rating divided by three different age groups represent a continuum; YG tended to be more 'sensitive' to foreign accent and therefore rated the LK accent as foreign to their ears more than the other two groups. In contrast, OG were less sensitive and tended to accept the LK accent as their own. The rating scores of MG were in the middle. Therefore, I strongly believe that the alternative division of age groups by other age ranges would not alter the results of the analysis.

²¹ I talked to each one of them prior to the rating test, to assure that they had no sign of hearing loss.

²² Although words in citation were collected from four LK speakers, the sentence utterances from only three out of four were used for the foreign-accent rating, due to the fact that the quality of one of the recordings was not good enough to be used for the rating test.

²³ The purpose of including the equivalent utterances from a Salavan speaker is to test whether the judges were skillful enough to realize that this accent clearly belongs to an outsider.

²⁴ Again, words in citation were collected from five LPL speakers, but the sentence utterances from four out of five informants were used as stimuli, due to the low quality of the recording from one of them.

²⁵ (See Appendix 2 for the rating sheet).

4.1. Tones in Lao Khrang

LK of Ban Kut Chok, Chai Nat Province, has five tones on live syllables (i.e., open syllables ending with either a long vowel or a diphthong, or closed syllables ending in sonorants). These are Tone 1: High-Falling-Rising /515/,²⁶ Tone 2: Low-Falling-Rising-Falling /2131/, Tone 3: High-Falling-to-Mid-Level /433/, Tone 4: High Level-Falling /552/, and Tone 5: High-Rising /45/. Tone 3, Tone 4, and Tone 5 were found on the dead syllables (the ones ending with a final stop). The following tone box in Table 5 shows each tone with its occurrence on each syllable type; Boxes A, B, and C are either open syllables ending with a long vowel or a diphthong or closed syllables ending with either a nasal consonant or a sonorant (/m, n, ŋ, j, w/). Boxes DL are long-checked syllables: those with a long vowel and a final stop sound (/p, t, k, or ʔ/). Boxes DS are short-checked syllables: those with a short vowel and a final stop sound (/p, t, k, or ʔ/).

	A	B	C	DL	DS
1	Tone 1 High-Falling- Rising /515/	Tone 3 High-Falling- to-Mid-level /433/	Tone 4 High Level-Falling /552/	Tone 4 Mid Level- Falling [442]	Tone 4 [21] Low-Falling
2	Tone 2 Low-Falling- Rising-Falling /2131/		Tone 5 High-Rising /45/		
3					
4			Tone 5 Low- Rising [23]	Tone 3 Low Level [22]	

Table 5: Five tones in LK according to its split and merger pattern from my analysis

The pitch shape in DL123 was closer to Tone 4 of C1, except that its height was slightly lower. The tone in DS123 may have been borrowed from Central Thai tones, as words in these boxes were assigned Low-Falling tone, which is a phonetic variant of the Low tone in Thai. Because of its falling curve in DS123, this tone was viewed as an allotone of Tone 4.²⁷ On the other hand, the tone of DL4 was considered an allotone of Tone 5 because they both had rising curve at the offset, although the tone height of C234 and DL4 were different. The tone shape and height, discussed here, can be observed in Figures 2 and 3, below.

Figure 2 shows the pitch contours of all LK five tones on live syllables of the same structure: /k^ha:/ (except for Tone 4: /k^haw/) below:

²⁶ The tone letters of each tone were based on the tonal realization in Figures 2 and 3, where semitones were divided into six lines representing five levels from 1 (the lowest) to 5 (the highest). The number of the tone letters depends on the complexity of each contour. For example, a falling contour was simply described with two letters, while a falling-rising tone requires three letters. On the other hand, four letters were used for the falling-rising-falling tone.

²⁷ Although one may argue that if the tone of DS123 is a variant of Tone 4, it might as well be a variant of Tone 3 since the latter also exhibits falling contour. My view of treating DS123 tone as an allotone of Tone 4 derives from the fact that the falling contour of both tones was at the offset, not the onset as evidenced in Tone 3.

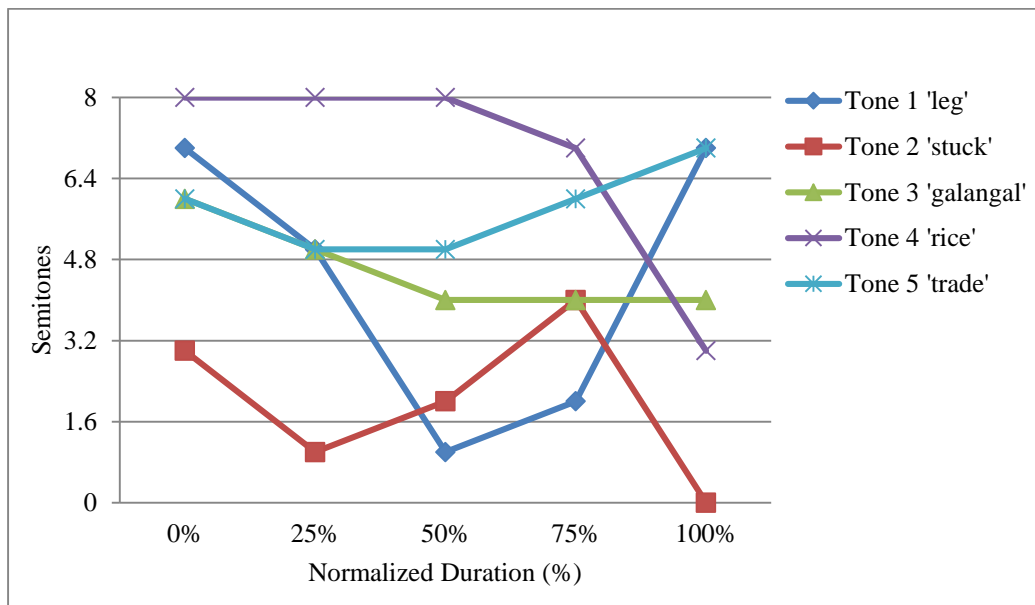
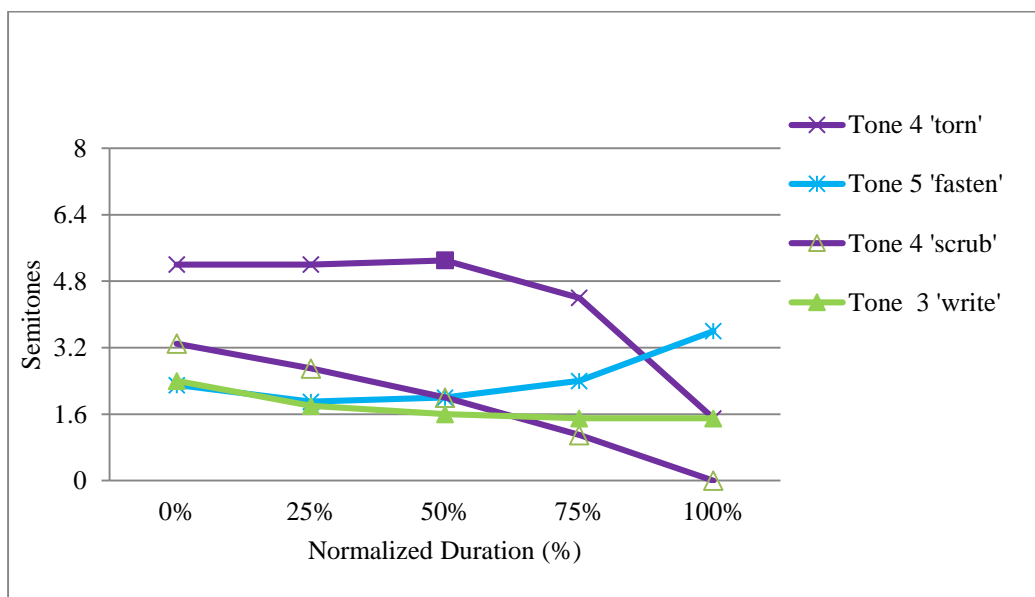
Figure 2: LK Five Tones on Live Syllables /k^haː/

Figure 3 presents two long dead syllables /k^haːt/ for Tones 4 and 5, and two short dead syllables /k^hat/ for Tones 4 and 3:

Figure 3: LK Three Tones on Dead Syllables /k^haːt/ for Tones 4 'torn' and 5 'fasten', and /k^hat/ for Tones 4 'scrub' and 3 'write'

In comparison with previous studies, described in Section 2.1, some, but not all, of LK tones of Ban Kut Chok resemble those of other LK varieties. For example, Tone 1 in LK of Ban Kut Chok resembles Tone 1 of LK at Song Phi Nong district, Suphan Buri, while Tone 2 in LK of Ban Kut Chok is close to that of LK in Nakhon Sawan, Nakhon Pathom, and one tonal variant in Kanchanaburi.²⁸ On the other hand, Tone 2 in LK looks different

²⁸ There were three tonal variants of Tone 2 in Sangkhla Buri district, Kanchanaburi. See Table 1 for details.

from that of Suphan Buri, and Loei. Such partial resemblance indicates that tones of LK in different regions have gradually deviated from each other.

4.2. Tones in Luang Phrabang Lao

LPL also has five tones in accordance with the type of syllable structure. Tone 1 is High Falling-to-Mid-Level /533/. Tone 2 is Low-Rising /12/. Tone 3 is Mid-Falling /32/. Tone 4 is High Level-Falling /552/. Finally, Tone 5 is Mid-Rising /34/. The tone of DL123 was treated as an allotone of Tone 4 because of its similar curve, despite the difference in height. The same factor also applies to the DL4 tone, which was considered an allotone of Tone 5 because of the similarity in tone shape with regard to its different height. A characteristic of the DS4 tone, despite its being level when given two tone letters, is that its curve slightly falls at the offset, as seen in Figure 5. The tonal assignment on different syllable structures and their pitch contours in semitones are shown Table 6, Figure 4, and Figure 5, respectively:

	A	B	C	DL	DS
1	Tone 1 High-Falling-to-Mid-Level /533/	Tone 3 Mid-Falling /32/	Tone 4 High Level-Falling /552/	Tone 4 Mid Level-Falling [332]	Tone 2 Low-Rising [12]
2	Tone 2 Low-Rising /12/		Tone 5 Mid-Rising /34/		
3					
4			Tone 5 Low-Rising [23]	Tone 3 Low Level [22]	

Table 6: Five tones in LPL according to its split and merger pattern from my analysis

Figure 4 shows five LPL tones on the syllable structure /k^ha :/:

Figure 4: LPL Five Tones on Live Syllables /k^ha :/

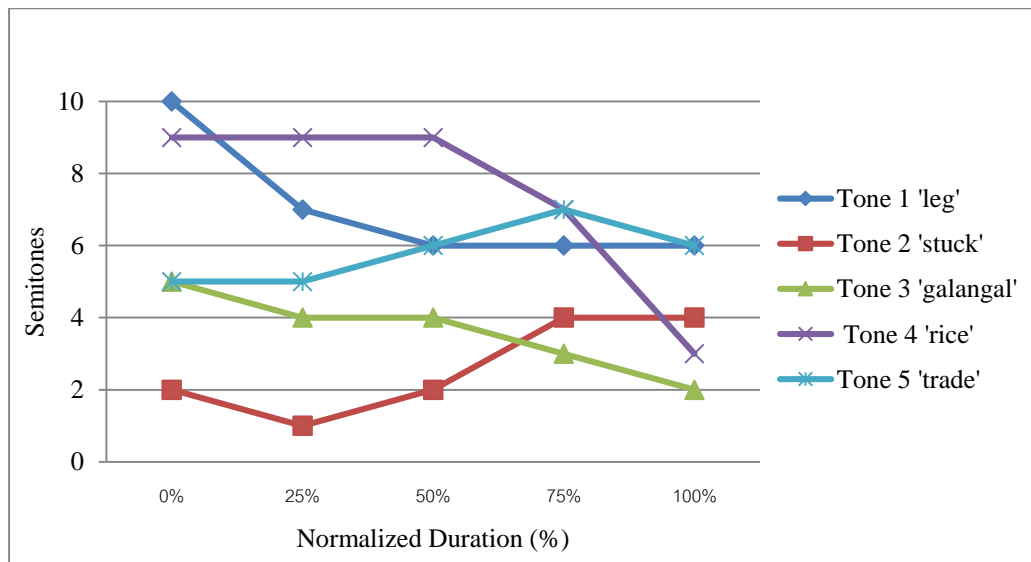
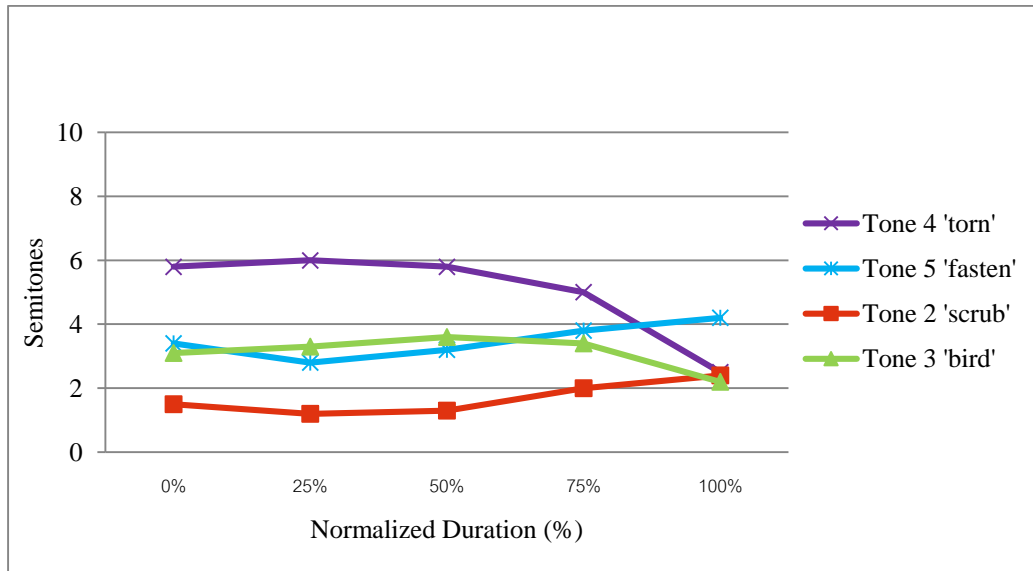


Figure 5 shows the tonal descriptions of the structure /k^ha:t/ for Tones 4 and 5, /k^hat/ for Tone 2, and /nok/ for Tone 3:

Figure 5: LPL Three Tones in dead syllables: /k^ha:t/ for Tones 4 'torn' and 5 'fasten', /k^hat/ for Tone 2 'scrub'. and /nok/ for Tone 3 'bird'

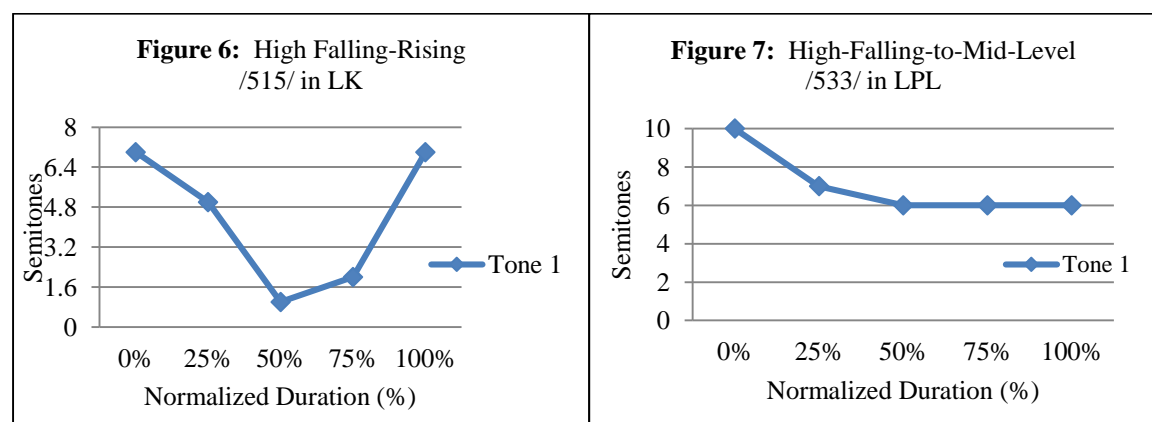


The tones in LPL from my data are similar to those described in Brown (1965), except for Tone 1, which is Mid-Falling-Rising in Brown's description, but High-Falling-to-Mid-Level from my data elicitation as shown above. There is no information about where Brown collected his tonal data, so it remains unclear how and why Tone 1 of these two studies is different.

4.3. Comparison between Lao Khrang and Luang Phrabang Lao

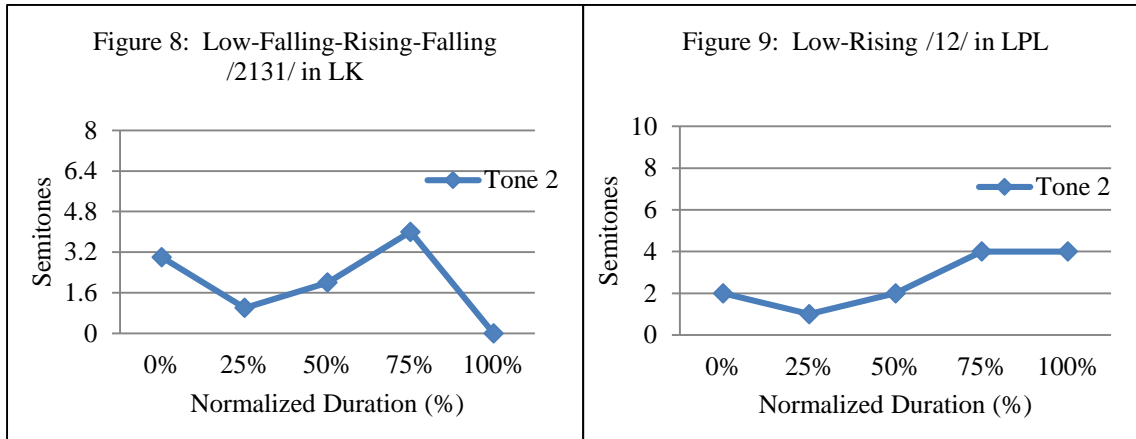
In this section, tones of both dialects were compared in semitones as follows:

4.3.1. Tone 1: Falling-Rising /515/ in LK and High-Falling-to-Mid-Level /533/ in LPL.



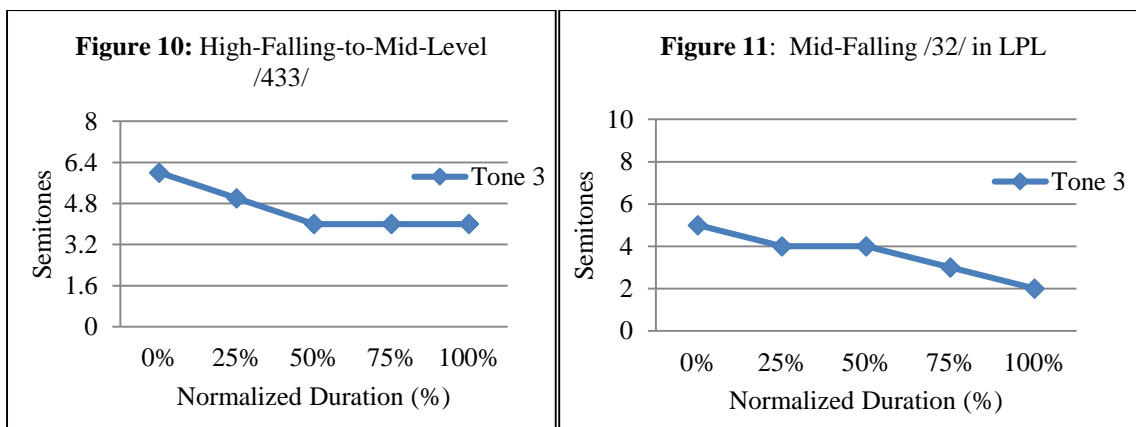
Both tones have high-falling shapes at the first half of the tones, but deviate in the pitch movement and in their pitch levels thereafter. Both tones occur in words of Box A1 such as /k^ha:1/ 'leg' and /hu:1/ 'ear.'

4.3.2. Tone 2: Low-Falling-Rising-Falling /2131/ in LK and Low-Rising /12/ in LPL



For Tone 2, the difference in the tonal movement can be seen at Point 75% where the tone starts to fall in LK, but remains level in LPL. Tone 2 in both dialects falls on words of Boxes A234, such as /dɛːŋ2/ ‘red’ and /k^hwaːj2/ ‘buffalo.’²⁹

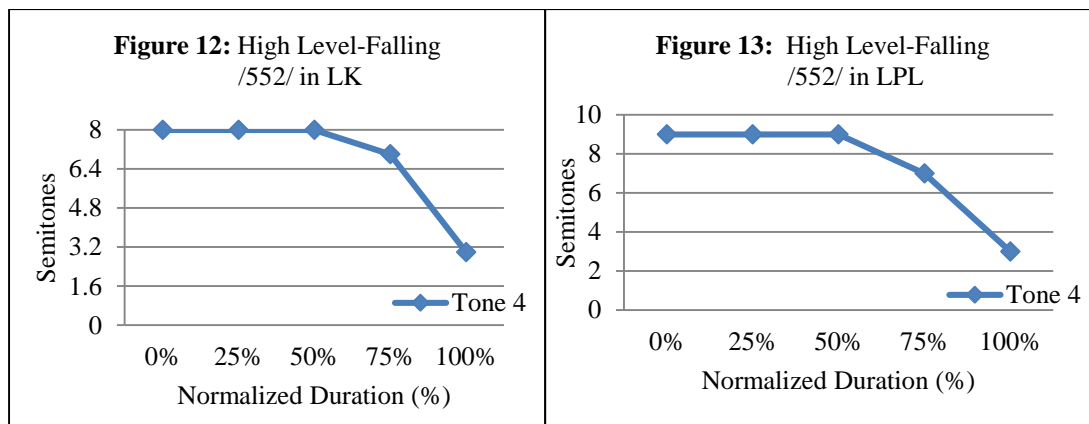
4.3.3. Tone 3: High-Falling-to-Mid-Level /433/ in LK and Mid-Falling /32/ LPL



Tone 3 in both dialects is falling, although it starts and ends at different levels. This tone is found in words of Boxes B1234, such as /siː4/ ‘four’ and /pian4/ ‘change.’

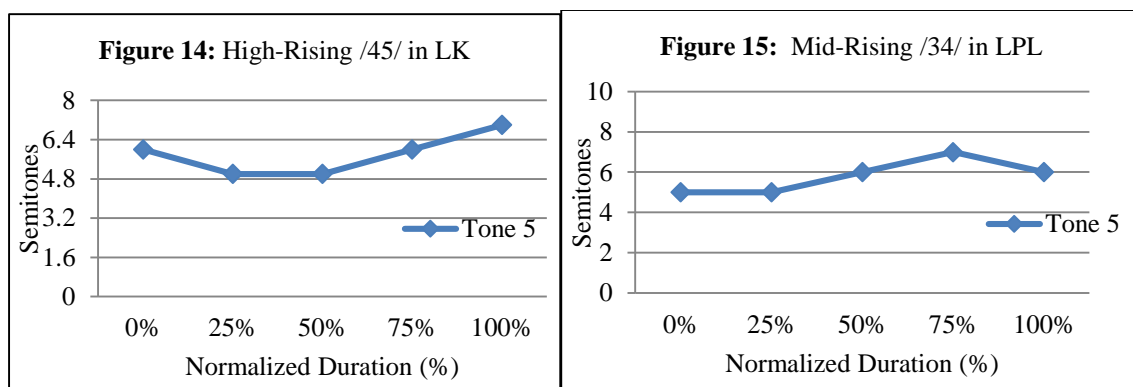
²⁹ Phonetically, this word is pronounced [k^huaj2] by many Lao speakers.

4.3.4. Tone 4: High Level-Falling /552/ in LK and LPL



Both dialects have this High Level-Falling tone in words of Box C1 as in /k^hɔj4/ ‘I,’ /san4/ ‘short,’ and DL123 as in /k^huat4/ ‘bottle,’ /bi : p4/ ‘squeeze.’

4.3.5. Tone 5: High-Rising /45/ in LK and Mid-Rising /34/ in LPL



Both dialects have a rising tone, although the tone moves downward at point 75% in LPL. Tone 5 can be found in words of Boxes C234, such as /kaw5/ ‘nine,’ /ma : 5/ ‘horse,’ and Box DL4 as in /mi : t5/ ‘knife,’ /se : p5/ ‘tasty.’

In summary, the results of the tonal analysis show that no tone of the two varieties is precisely the same in both height and shape. Tone 1 and Tone 2 have similar contour shape at the onset but they deviate from each other at Point 50% and Point 75%, respectively. Tone 3 and 4 are all falling tones. Tone 5 of the two varieties shows rising contour, but it deviates from the others at Point 75%. The deviation at the back points in Tone 1, Tone 2, and Tone 5 might therefore act as a phonetic cue for an LPL listener to be able to detect the non-native accent of an LK speaker, and vice versa. Further tonal differences could be observed in Boxes DS123 of both dialects; whereas the DS123 tone in LK was Low-Falling and thus classified as an allotone of Tone 4, the DS123 tone in LPL was Low-Rising, an allotone of Tone 2. Such differences may add up to a clearer deviation of tone between these two dialects. However, from my observation it seems that in connected speech the complex contour tones become simplified in both dialects. In connected speech, the

Falling-Rising (concave) shape of Tone 1 in LK becomes Falling, similar to Tone 1 in LPL. In the same fashion, the Falling-Rising-Falling (concave-convex) shape of Tone 2 in LK is reduced to a concave contour like Tone 2 in LPL. The phonetic Rising-Falling (convex) contour of Tone 5 in LPL becomes rising for some LPL speakers. Given the fact that the tones of both varieties become more similar to each other in connected speech, I assumed that there may not be many LPL speakers who would be able to distinguish the LK accent from their own.

5. The Results of Lao Khrang Accent Rated by Luang Phrabang Judges

As previously explained in Section 3, the judges were required to listen to forty sentence tokens. Three LK speakers uttered thirty sentences, with each one uttering five sentences. Each sentence was produced twice for this rating test (5 sentences x 3 LK speakers x 2 times = 30 sentence tokens). These thirty sentence tokens formed 75.0% of the tokens. The other ten sentences were controlled; eight were uttered by four LPL speakers. Each speaker uttered two sentences (4 LPL speakers x 2 times = 8 sentences). The other two sentences were uttered by one SLV speaker. These ten controlled sentences were sought to test whether the judges could detect their own LPL dialect and SLV as a non-LPL dialect.

I will first explain how I selected the judges for data analysis in 5.1. In this section, I will also show the results of the selected judges' ratings of the LPL and SLV accents, confirming their ability to detect the LPL accent of their own peers and the SLV accent as non-native to their ears. Section 5.2 shows and compares the results of all the judges' ratings of LK and LPL accents. Last, in Section 5.3, the results from LPL judges were divided into three age groups. The ratings of the LK accent, the LPL accent, and the SLV accent will be compared among these three groups.

5.1. Selection of the judges

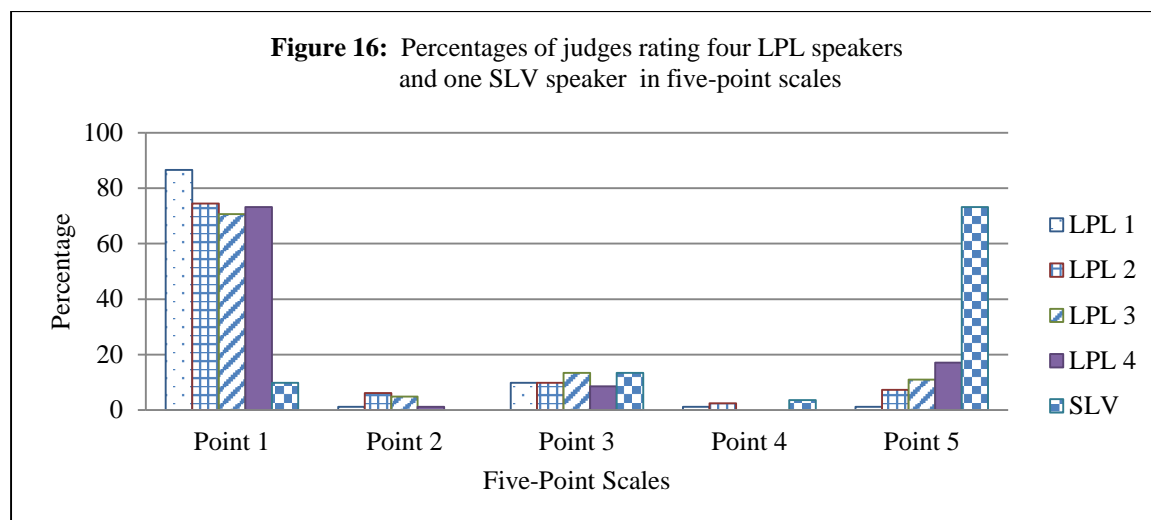
In addition to having no hearing impairment, a skillful judge should also have 'good ears,' by which I refer to the ability to detect the sentences uttered by LPL speakers as their own accent and the ones from the SLV dialect as foreign to their ears. In rating the LPL dialect, therefore, a skillful judge must tick either Point 1 or 2 (indicating 'definitely native accent' or 'probably native accent') as correct answers. On the other hand, she must choose either Point 4 or 5 (indicating 'probably non-native accent' or 'definitely non-native accent' respectively) when listening to sentences uttered by the SLV speaker. Skillful judges whose answers I used for the data analysis should have scores of five (or more) out of ten points in rating the LPL and SLV accents. That is, they should correctly detect the LPL accent as their own dialect (Point 1 or 2 on the Likert scales) and the SLV dialect as definitely a different dialect (Point 4 or 5 on the Likert scales) in at least half of all the controlled sentences.³⁰ Among the forty-two judges, all but one passed these criteria to qualify as a judge.³¹ Moreover, it can be seen from Appendix III that the youngest listener, (listener #1, age 15 in Appendix III) and the oldest one, (listener #42, age 80 in Appendix III) were qualified as judges for the rating test, despite the fact they were the youngest and oldest,

³⁰ In rating the LPL accent, Point 3 would be counted as an incorrect answer similar to Points 4 and 5, since it indicates that the judge could not identify her peer accent confidently. On the other hand, a judge who ticked Point 3 for the sentences uttered by one SLV speaker showed her ambivalence in rating. In this case, Point 3 would be grouped together with Points 1 and 2 as an incorrect answer, indicating the judge's inability to detect the foreignness of the SLV accent.

³¹ See Appendix III for the raw scores of all the judges.

because they received correct scores of 70% and 100%, respectively. The results of the rating test, therefore, are based on the scores from forty-one qualified judges.

The rating results of controlled sentences from the LPL and SLV accents by forty-one judges are shown below:



Note: Points 1–5 indicate the five-point Likert scales, ranging from ‘definitely native accent’ (Point 1) to ‘definitely non-native accent’ (Point 5). LPL1-4 refers to the four LPL speakers. SLV refers to one SLV speaker.

From Figure 16, it can be seen that more than 70.0% of all the judges gave the highest rating (Point 1) to all four LPL speakers. On the other hand, the lowest rate (Point 5) was given to the SLV speaker by 73.2% of all the judges. The results from Figure 16 indicate that these forty-one judges were able to distinguish the accent of their own peers from the foreign one.

The F-test or One-Way Anova in the following table shows that the judges’ rating scores given to four LPL speakers were not statistically significant, which means that LPL speakers were all perceived as correctly having the LPL accent by the judges.

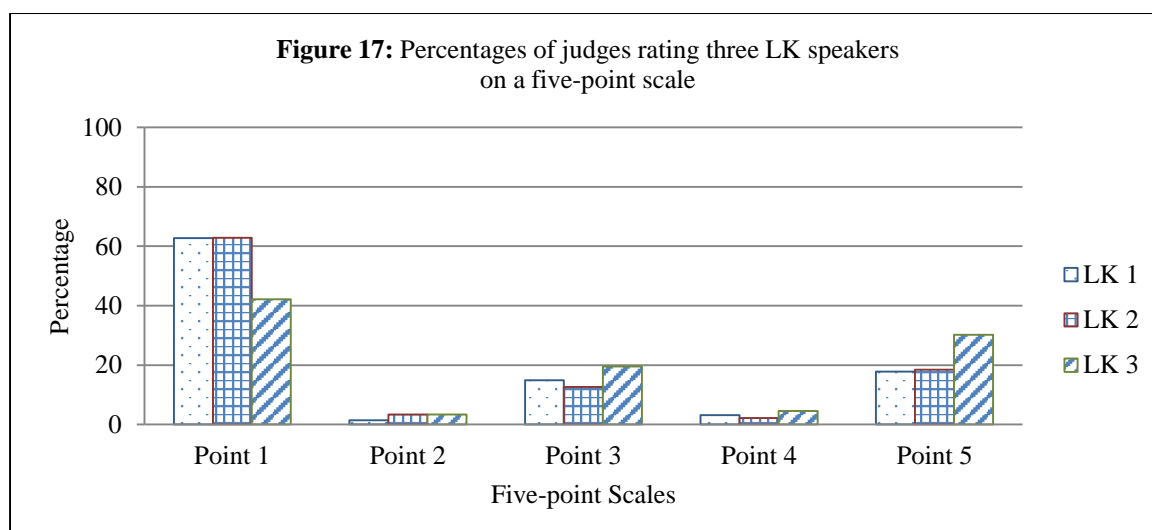
Table 7: F-test of average scores given to four LPL speakers

LPL speakers	N	\bar{X}	S.D.	F	Sig.
LPL 1	41	1.73	0.50	1.413	.241
LPL 2	41	1.61	0.59		
LPL 3	41	1.54	0.55		
LPL 4	41	1.49	0.64		
Total	164	1.59	0.57		

*Significant at level 0.05

5.2. Ratings of the LK accent

In Figure 17, the rating results of the LK accent from the sentence tokens uttered by three LK speakers, rated by forty-one LPL judges, are shown.



Note: LK1-3 refer to three LK speakers.

As shown in Figure 17, the ratings for LK 1 and LK 2 are proportional; 62.7% and 62.9% of all the judges assigned Point 1 to LK 1 and LK 2, respectively, while LK 3 was given Point 1 by less than half, or just 42.2%, of all the judges. The statistical results confirm that the ratings given to LK 3 were statistically different from those given to LK 1 and LK 2, as shown in Table 8:

Table 8: F-test of average scores given to three LK speakers

LK speakers	N	\bar{X}	S.D.	F	Sig.
LK 1	41	6.41	2.52	7.791	.001*
LK 2	41	6.59	2.40		
LK 3	41	4.56	2.79		
Total	123	5.85	2.72		

*Significant at level 0.05

In Table 8, the F-test or One-Way Anova indicates that the judges' rating scores given to all three LK speakers were statistically significant. Moreover, when the average scores given to each LK speaker were compared by using the Least Significant Difference (LSD) test, the scores given to LK 3 were found to be significantly different from those given to LK 1 and LK 2.

Table 9: Comparison of the rating scores given to three LK speakers

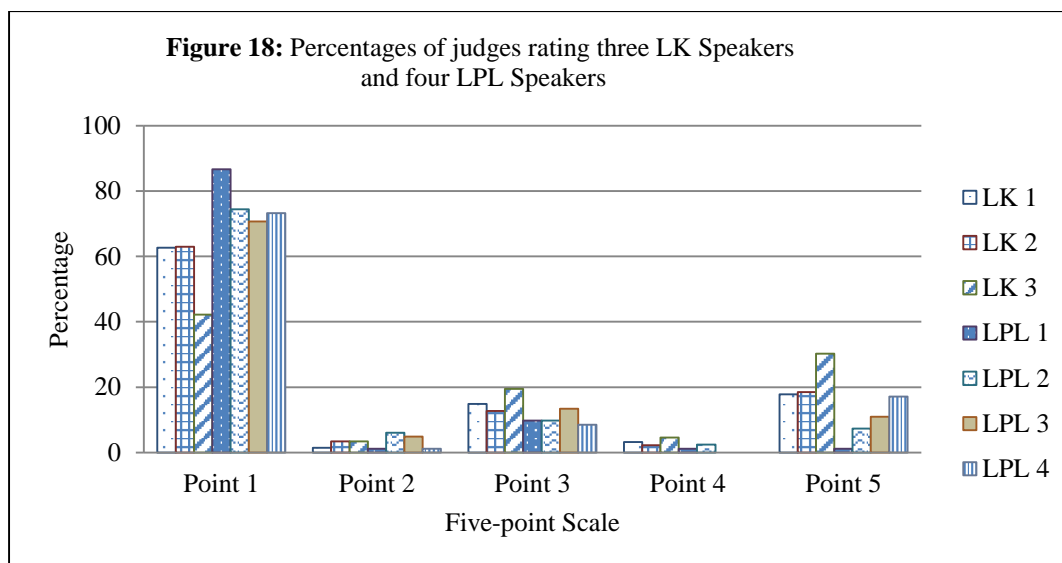
LK		LK1	LK2	LK3
	\bar{X}	6.41	6.59	4.56
LK1 (Sig.)	6.41	-	-0.18 (0.765)	1.85* (0.001)
LK2 (Sig.)	6.59	0.18 (0.765)	-	2.03* (0.001)
LK3 (Sig.)	4.56	-1.85* (0.001)	-2.03* (0.001)	-

*Significant at level 0.05

The statistical results from Tables 8 and 9 thus show that the perceptions of the LK accent vary across speakers, and that LK 3 was judged to have the heaviest foreign accent among three speakers. LK 3's speech will be discussed further in Section 6.

5.3. Ratings of the LK accent compared with the LPL accent

Figure 18 shows a comparison of the foreign-accent rating given to three LK speakers and four LPL speakers:



When the rating scores given to the LK accent were compared with those given to the LPL accents using the Paired Sample t-test, it was found that they were statistically significant, as shown in Table 10:

Table 10: Paired Sample t-test of difference in Ratings given to LPL and LK accents

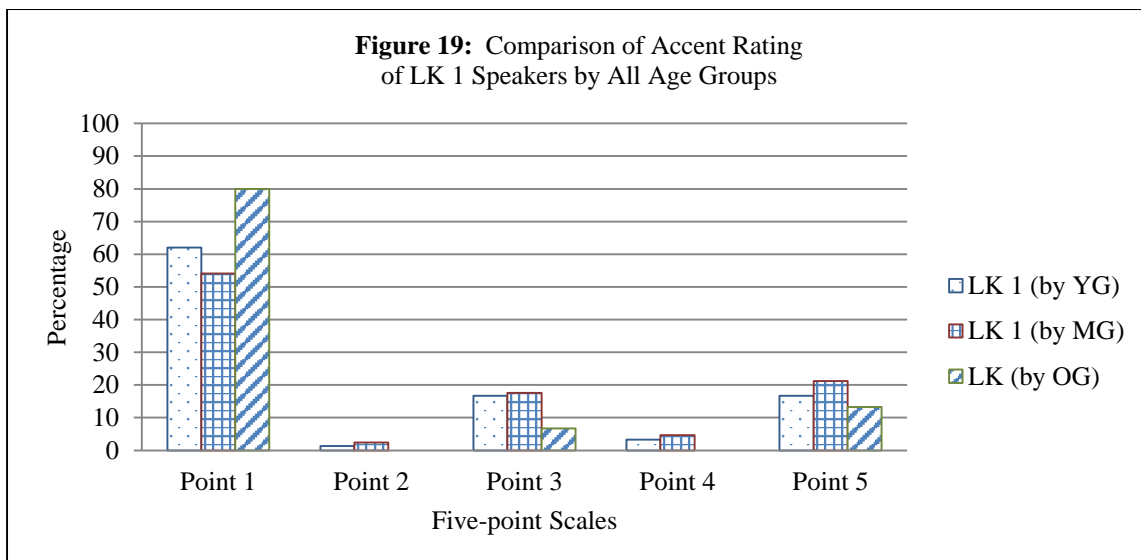
Total Scores: LK 1, LK 2, LK 3		Total scores: LPL 1, LPL 2, LPL 3, LPL 4		Total Scores: LK123 - Total scores: LPL 1234		T	Sig. (2-tailed)
Mean	S.D.	Mean	S.D.	Mean	S.D.		
17.56	6.26	6.37	1.43	11.20	5.67	12.640	.000*

*Significant at level 0.05

Table 10 indicates that judges had no trouble identifying the LPL accent, but were uncertain when deciding the degree of native to non-native accent when listening to the LK accent.

5.4. Ratings of the LK accent by three different age groups

Because of the wide range of ages (from 15 to 80), the rating results were divided into three age groups; young generation (YG), between the ages of 15 and 24; middle generation (MG), between the ages of 25 and 44; and old generation (OG), between the ages of 45 and 80. Figures 19, 20, and 21 show the average scores (Points 1–5 on the Likert scales) given to the sentences uttered by LK 1, 2, and 3 speakers respectively. The statistical results will be shown and explained thereafter.



In Figure 19, sentences uttered by LK 1 were rated by judges of three different age groups. The percentages of the average number of judges selecting each point were remarkably different for different age groups, with the OG group rating Point 1 the highest. All in all, more than half of all the judges believed that the LK 1 speech was in the LPL accent.

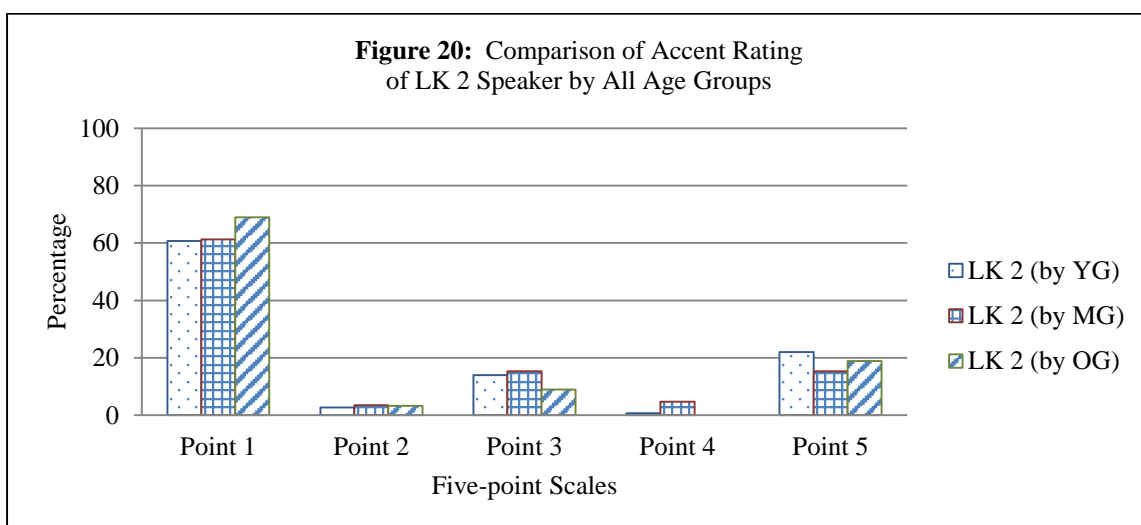


Figure 20 represents the average number of judges from the three different age groups who rated the speech of LK 2. More than half of all the judges gave Point 1 to sentences uttered by LK 2. As with the ratings of LK 1, the OG group also assigned Point 1 to LK 2's speech in a slightly higher number than the other two groups.

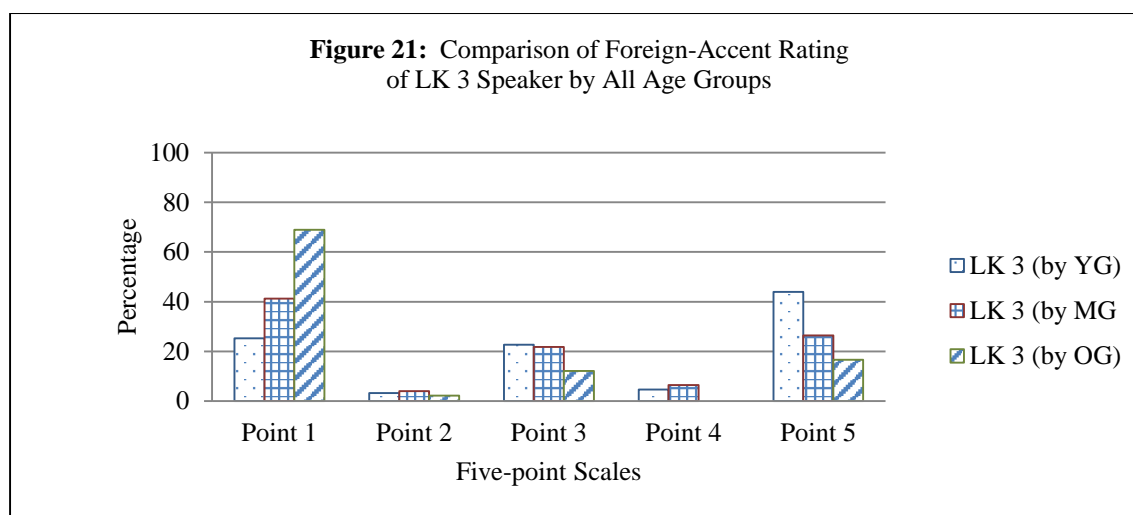


Figure 21 saw the most observable variation among the three groups of judges in assigning Point 1 to LK 3's speech. Only 25.3% of the YG group felt that LK 3's speech was that of an LPL speaker. On the contrary, as many as 68.9% of the OG were more tolerant in accepting that LK 3's speech evidenced an LPL accent.

Given the fact that there were variations across the ratings of each speaker as well as each age group, statistical tests were conducted to determine if there was any significance between the ratings of different groups. Using the F-test, Table 11 shows the rating results of the LK accent divided by the three age groups below:

Table 11: F-test of average scores given to LK speakers

Age of judges	N	\bar{X}	S.D.	F	Sig.
15-24 years old (16 judges)	15	15.53	3.40	4.698	.015*
25-44 years old (17 judges)	17	16.65	6.04		
45-80 years old (9 judges)	9	22.67	7.98		
Total	41	17.56	6.26		

*Significant at level 0.05

The results shown in Table 11 were statistically significant when the F-test or One-Way Anova was used to test for the statistical significance among different age groups. In other words, age was indeed a factor that affected the ratings of the LK accent. Table 12 contains the statistical results using the L.S.D. test to compare the ratings among each age group.

Table 12: Comparison of the rating scores of the LK accents by three groups

Age	\bar{X}	15-24 years old	25-44 years old	45-80 years old
		15.53	16.65	22.67
15-24 years old (Sig.)	15.53	-	-1.12 (0.588)	-7.14* (0.006)
25-44 years old (Sig.)	16.65	1.12 (0.588)	-	-6.02* (0.015)
45-80 years old (Sig.)	22.67	7.14* (0.006)	6.02* (0.015)	-

*Significant at level 0.05

As Table 12 shows, the ratings of the OG group were found to be significantly different from the other two age groups, indicating that the OG group accepted the LK accent as being LPL more than the other two groups.

5.4. Ratings of the controlled sentences of LPL and SLV by three different age groups

Further statistical analyses were conducted to find out whether there was any significance in rating the LPL accent and the SLV accent among judges of different age groups. We have already seen from Figure 16 that as many as 70.0% of all the judges could identify the speech from all four LPL speakers as their own accent. The following table, Table 13, presents statistical results as follows:

Table 13: F-test of average scores given to LPL speakers

Age	N	\bar{X}	S.D.	F	Sig.
15-24 years old	15	6.27	1.28	.111	.895
25-44 years old	17	6.35	1.50		
45-80 years old	9	6.56	1.67		
Total	41	6.37	1.43		

*Significant at level 0.05

Using the F-test or One-Way Anova revealed that the rating scores given to the LPL accent by the three groups of judges were not statistically significant, which means that the judges of all ages could clearly identify all of the LPL accents.

Figure 16 also reveals that 73.2% of all the judges rated the SLV accent as a foreign accent. The F-test results as shown in Table 14 shows the insignificant difference in the SLV ratings among the three age groups:

Table 14: F-test of average scores given to SLV speakers

Age	N	\bar{X}	S.D.	F	Sig.
15-24 years old	15	0.13	0.35	.720	.493
25-44 years old	17	0.18	0.39		
45-80 years old	9	0.33	0.50		
Total	41	0.20	0.40		

*Significant at level 0.05

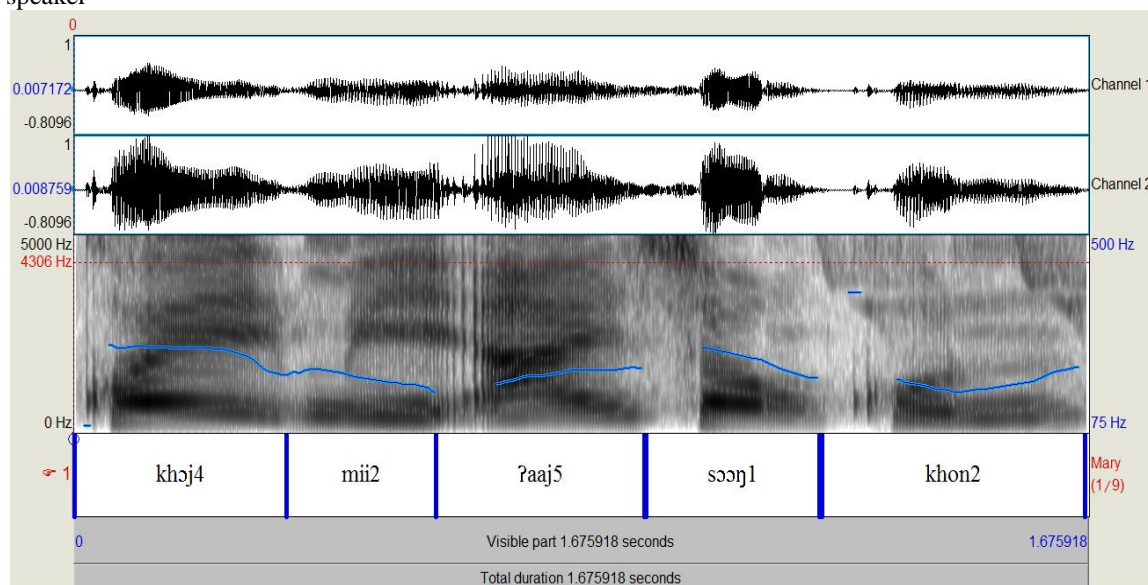
In sum, approximately 70.0%-80.0% of all the qualified judges could identify all four LPL speakers as speaking their own dialect, with no statistical significance among the three different age groups. Of the judges, 73.2% noticed that the SLV accent was a different dialect, again, with no statistical significance between the three age groups. On the other hand, the ratings of the LK accent yielded statistical significance between both the LK speakers and the different age groups. The scores given to the third LK speaker were significantly different from those given to the other two LK speakers. Moreover, the ratings given by the different age groups were found to be statistically different. The following section will discuss the possible reasons for these differences.

Discussion

Section 5 revealed that the three age groups gave ratings of the LK 3 speaker that were significantly different from each other. While LK 1 and LK 2 were given Point 1 scores (i.e., that their accents were LPL) at 62.7% and 62.9% by all the judges, the LK 3 speaker did not ‘pass’ this native-like ratings test, although the oldest group of judges seemed to be more accepting, compared to the other two groups, as they most frequently gave Point 1 to her accent. The LK 3 speaker received Point 1 scores from only 42.2% of all the judges, which means that less than half of them believed that her accent was definitely that of LPL.

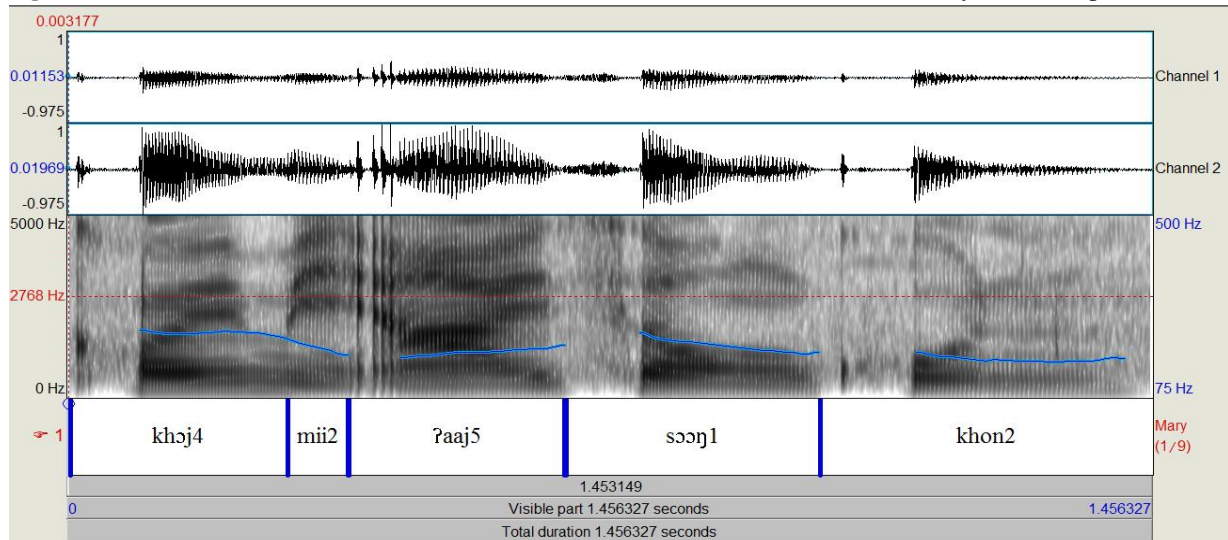
Before looking at what makes her speech sound less LPL native-like compared to the other two, we need to refer back to the results of the comparison between the tonal systems of LK and LPL. In Section 4, I mentioned that Tone 1, Tone 2, and Tone 5 in both dialects all become less complex in shape when they are a part of connected speech, making their tonal contours more similar to each other. Next, we compare the waveform of the same sentence uttered by the LPL 2 and LK 1 speakers.³²

Figure 22: Waveform of the sentence /k^hɔj4 mi:2 ʔa:j5 sɔ:ɲ1 k^hon2/ uttered by the LPL 2 speaker

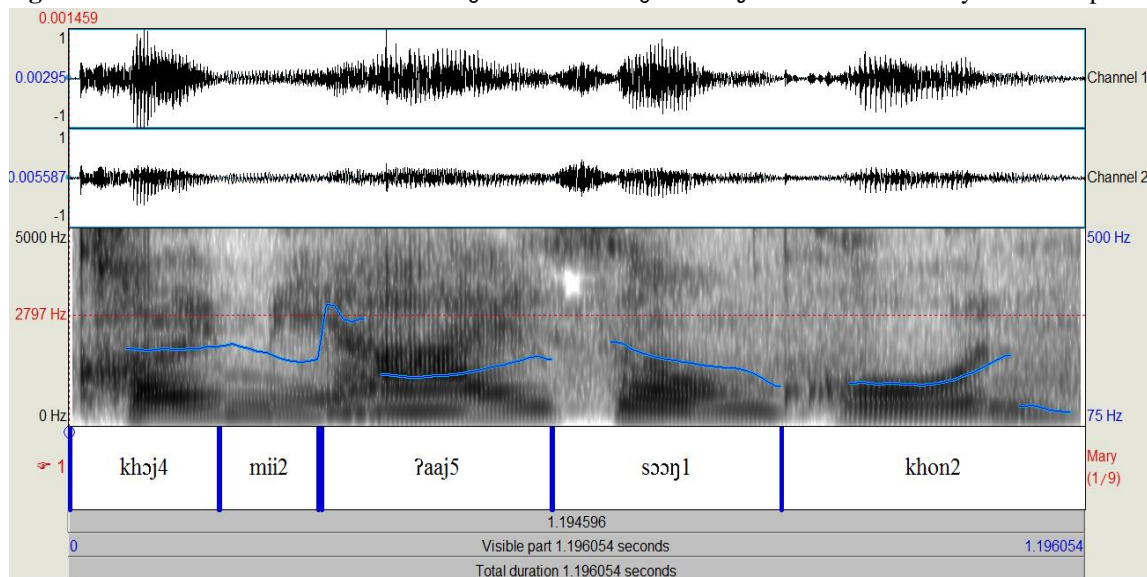


This sentence consists of all the four tones in question: Tone 1, Tone 2, Tone 4, and Tone 5. The waveform shows that Tone 4 High Level-Falling /552/ in the first syllable /k^hɔj4/ becomes level, slightly falling towards the following syllable. Tone 2 Low-Rising /12/ in /mi:2/ becomes falling. Tone 5 Mid-Rising /34/ in /ʔa:j5/ remains its rising contour. Tone 1 High-Falling-to-Mid Level /533/ in /sɔ:ɲ1/ was reduced to falling. Tone 2 in the last syllable /k^hon2/, unlike the second syllable, maintains its rising contour.

³² Due to some technical problems, the IPA transcriptions described in Figures 22, 23, and 24 show double vowels, for example, /aa/ instead of /a:/, and /h/ for the superscript /-^h/, as in /kh/ instead of /k^h/.

Figure 23: Waveform of the sentence /k^hɔj4 mi:2 ʔa:j5 sɔ:ɲ1 k^hon2/ uttered by the LK 1 speaker

In this sentence uttered by LK 1, it can be seen that Tone 1, Tone 2, and Tone 4 become less complex in shape just like the sentence uttered by the LPL 2. Tone 4 High Level-Falling /552/ (/k^hɔj4/) becomes level, Tone 2 Low Falling-Rising-Falling /2131/ (/mi:2/) only falls, Tone 5 High-Rising /45/ maintains its rising contour, Tone 1 High-Falling-Rising /515/ (/sɔ:ɲ1/) was reduced to falling. The last syllable, which bears Tone 2, simply becomes level.³³ By comparing the tonal patterns of these two utterances, it is not so surprising that as many as 62.7% of all the judges believed that LK 1 had an LPL accent, even if her tonal assignment of the last syllable was not what should have been expected. Now, let us take a look at the tonal pattern shown in the utterance of LK 3, below:

Figure 24: Waveform of the sentence /k^hɔj4 mi:2 ʔa:j5 sɔ:ɲ1 k^hon2/ uttered by the LK 3 speaker

³³ The word /k^hon2/ in standard Thai bears a Mid-Level tone. This word was uttered in mid-level according to the waveform in Figure 23, as well as from what I heard. Obviously, the speaker accidentally switched to the Thai tone. This tone-switching is not surprising because all of the speakers could speak Standard Thai.

From Figure 24, Tone 4 High Level-Falling /552/ of the first syllable /k^hɔj4/ becomes level, Tone 2 Low-Falling-Rising-Falling /2131/ (/mi:2/) was shortened to slightly falling,³⁴ Tone 5 High-Rising /45/ maintains its rising contour, Tone 1 High-Falling-Rising /515/ (/sɔ:ŋ1/) becomes falling. Tone 2 of the last syllable /k^hon2/ becomes rising. By comparing LK 3's tonal patterns with those of LPL 2 and LK 1 above, LK 3's tonal production was not so different from the other two. In particular, LK 3 could utter the word /k^hon2/ in its correct tonal variant: rising. In this regard, her overall tonal pattern was even closer to that of LPL 2 as shown above. And yet she was rated the lowest. It is clear from this account that the tonal pattern was not the main factor that caused the lowest ratings of her utterances by all the judges. Certainly, there must have been some other phonetic cues that might have affected the perception of speech sound. However, it is beyond the scope of this paper to investigate phonetic cues other than tones. I speculate that the lowest ratings she received from judges were due to the harshness of her voice quality, as can be seen from the fuzziness in her waveform. Other phonetic cues such as the quality of consonants, vowel length, and rhythm, should be further investigated.

In Section 5, we saw that three generational groups gave significantly different ratings to the LK accents, with the OG group being the most generous judges. This is perhaps because the YG were exposed to a wider variety of accents than the OG, who spend most of the time at home without much contact with outsiders, and so were more tolerant in rating different accents.

To recapitulate, despite some utterances produced by the third LK speaker which could be easily recognized as non-native by a large number of LPL judges, it could be concluded that two of three LK speakers' accents are close to LPL's, due to the fact that more than half of the judges could not differentiate them from their own accent. As mentioned in the first section, LK are descendants of the people who lived in the area of what is now Luang Phrabang over two-hundred years ago. The results from tonal production and perception indicate that the tonal systems of both dialects remain close to each other, and that more than half of the LPL judges could not detect the non-native accents of two of the three LK speakers. We learn from these results that the age of the judges as well as the speaker's idiosyncratic quality of voice play crucial roles in rating one's accent. We should also keep in mind that the results from this research were from female judges. It would be interesting to find out how male judges would rate the LK accents when compared with the results from females.

6. Conclusions

The LK people of Ban Kut Chok village, Nong Mamong district, Chai Nat Province are descended from LPL migrants. The exact date of migration is hitherto unknown, although they must have arrived in Thailand about two hundred years ago as prisoners of war from several battles between Siam and Laos from the reign of King Taksin to the reign of King Rama III. Today, the younger generations of LK at Ban Kut Chok village cannot speak LK, although some might still be able to comprehend it. The comparison between the tonal systems of LK and LPL reveals that there are similarities between most tones and their tonal variants, which leads to a prediction that LPL native speakers might mistake LK

³⁴ An abrupt rising curve could be observed at the end of this word /mi:2/, which preceded the initial glottal stop /ʔ/ of the next word /ʔa:j5/. This glottal stop apparently inhibits turbulence probably due to its creaky voice quality. I thus speculate that the sharp rising curve mentioned above was affected by the creaky voice quality of the following /ʔ/, if not by other unknown acoustic factors.

as their own accent. This is indeed the case at least for two of the three LK speakers; more than half of the LPL judges rated utterances from two LK speakers as their native accent (62.7% for LK 1 and 62.9% for LK 2), while 42.2% of them rated utterances as native-like for the third speaker. Although the LK dialect has been dominated by Standard Thai since the day their descendants moved to settle in the land of Siam two hundred years ago, the results from both tonal production and perception analyses indicated that there are still linguistic ties between both dialects even if there has been no language contact between these two communities. Further research should be carried out to include male judges in the ratings. Moreover, it would be interesting to assess the ratings of the LPL accents by LK speakers. In this way, a more complete picture of the tonal perceptions of these two dialects could emerge.

7. Acknowledgements

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Appendix I: Sixty Word lists for data elicitation, arranged in Gedney’s tone box.
(Adapted from Phinnarat 2546)

	A	B	C	DL	DS
1	1. /huː/ ‘ear’ 2. /kʰaː/ ‘leg’ 3. /sɔːŋ/ ‘two’	13. /pʰaj/ ‘bamboo’ 14. /kʰaː/ ‘galangal’ 15. /tʰua/ ‘bean’	25. /haː/ ‘five’ 26. /sua/ ‘shirt’ 27. /mɔː/ ‘pot’	37. /kʰuat/ ‘bottle’ 38. /muak/ ‘cap’ 39. /sɔːk/ ‘elbow’	49. /pʰak/ ‘vegetable’ 50. /hok/ ‘six’ 51. /sip/ ‘ten’
2	4. /puː/ ‘crab’ 5. /taː/ ‘eye’ 6. /kin/ ‘eat’	16. /kaj/ ‘chicken’ 17. /taw/ ‘tortoise’ 18. /paː/ ‘woods’	28. /kaw/ ‘nine’ 29. /paː/ ‘aunt’ 30. /tuː/ ‘closet’	40. /piːk/ ‘wing’ 41. /kɔːt/ ‘hug’ 42. /paːk/ ‘mouth’	52. /kop/ ‘frog’ 53. /cet/ ‘seven’ 54. /teʔ/ ‘kick’
3	7. /deːŋ/ ‘red’ 8. /daːw/ ‘star’ 9. /baj/ ‘leaf’	19. /baː/ ‘shoulders’ 20. /ʔim/ ‘full’ 21. /daː/ ‘scold’	31. /daːj/ ‘thread’ 32. /ʔɔːj/ ‘sugar cane’ 33. /ʔaːj/ ‘elder brother’	43. /biːp/ ‘squeeze’ 44. /bɔːt/ ‘blind’ 45. /duːt/ ‘suck’	55. /bet/ ‘fishhook’ 56. /dip/ ‘raw’ 57. /ʔok/ ‘chest’
4	10. /muː/ ‘hand’ 11. /kʰwaːj/ ‘buffalo’ 12. /ŋuː/ ‘snake’	22. /pʰɔː/ ‘dad’ 23. /ʔaj/ ‘saw’ 24. /meː/ ‘mom’	34. /kʰiw/ ‘eyebrow’ 35. /nam/ ‘water’ 36. /lin/ ‘tongue’	46. /miːt/ ‘knife’ 47. /sɛːp/ ‘tastety’ 48. /swak/ ‘rope’	58. /nok/ ‘bird’ 59. /mot/ ‘ant’ 60. /lep/ ‘nail’

Note: There are three types of lines. Each type represents the following:

1. Thin lines are the box frame.
2. Thick lines show patterns of the tonal split. For example, the horizontal thick line between A1 and A2 indicates that A1 splits from A2-3-4.
3. Dot lines show patterns of tonal merger. For example, all the horizontal dot lines in Column B indicate that B1-2-3 and 4 merge into one single toneme.
4. The word /baj/ ‘leaf’ has a diphthong /aj/ in LK but /aʔj/ in LPL.

APPENDIX II: Rating Sheet for Luang Phrabang Judges (originally written in Lao with no English translation)

ຊື່..... ອາຍຸ..... ຊາຍ.. ຍິງ
 Name Age Male Female

ບ້ານ..... ຮຽນຊັ້ນໃດ..... ອາຊີບ.....
 Village Name Highest Degree Occupation

ກະລຸນາຟັງປະໂຫຍກຕໍ່ໄປນີ້ ແລ້ວຕັດສິນກ່ຽວກັບສໍານຽງປາກເວົ້າຕາມຄວາມເຫັນຂອງທ່ານ ໂດຍຂຽນເຄື່ອງໝາຍ ✓ ລົງໃນຊ່ອງວ່າງທີ່ເໝາະສົມ
 Please listen to the following sentences and decide the degree of nativeness according to your view by ticking the most appropriate box:

- 1 ແມ່ນໝາຍເຖິງ ສຽງນີ້ ແມ່ນຄົນຫຼວງພະບາງຢ່າງແນ່ນອນ.
 Box 1: This is definitely a speech sample of a LPL person.
- 2 ແມ່ນໝາຍເຖິງ ສຽງນີ້ ຄືຊິແມ່ນຄົນຫຼວງພະບາງ.
 Box 2: This is probably a speech sample of a LPL person.
- 3 ແມ່ນໝາຍເຖິງ ບໍ່ສູ້ແນ່ໃຈປານໃດ.
 Box 3: I'm not sure where the speaker comes from.
- 4 ແມ່ນໝາຍເຖິງ ສຽງນີ້ ຄືຊິບໍ່ແມ່ນຄົນຫຼວງພະບາງ.
 Box 4: This is probably not a speech sample of a LPL person.
- 5 ແມ່ນໝາຍເຖິງ ສຽງນີ້ ບໍ່ແມ່ນຄົນຫຼວງພະບາງຢ່າງແນ່ນອນ.
 Box 5: This is definitely not a speech sample of a LPL person.

ປະໂຫຍກທັງໝົດມີ 40 ປະໂຫຍກ There are 40 sentences in total.	1 ແມ່ນແທ້ Definitely	2 ຄືຊິແມ່ນ Probably	3 ບໍ່ແນ່ໃຈ Not sure	4 ຄືຊິບໍ່ແມ່ນ Probably not	5 ບໍ່ແມ່ນແທ້ Definitely not
1. ຂ້ອຍມີອ້າຍສອງຄົນ. /k ^h ɔj4 mi:2 ?a:j5 sɔ:ŋ1 k ^h on2/					
2. ຂ້ອຍເຈັບມືຫຼາຍ. /k ^h ɔj4 cɛp3 mu:2 la:j1/					
3. ຂ້ອຍມີອ້າຍສອງຄົນ. /k ^h ɔj4 mi:2 ?a:j5 sɔ:ŋ1 k ^h on2/					
4. ຂ້ອຍມີຄວາຍສອງໂຕ. /k ^h ɔj4 mi:2 k ^h wa:j2 sɔ:ŋ1 to:2/					

5. ນ້ຳເຫັນຄວາຍຫ້າໂຕ. /na:5 hen2 k ^h wa:j2 ha:4 to:2/					
6. ຂ້ອຍມີຄວາຍສອງໂຕ. /k ^h ɔj4 mi:2 k ^h wa:j2 sɔ:ŋ1 to:2/					
7. ນ້ຳເຫັນຄວາຍຫ້າໂຕ. /na:5 hen2 k ^h wa:j2 ha:4 to:2/					
8. ນ້ຳເຫັນຄວາຍຫ້າໂຕ. /na:5 hen2 k ^h wa:j2 ha:4 to:2/					
9. ຂ້ອຍມີອ້າຍສອງຄົນ. /k ^h ɔj4 mi:2 ?a:j5 sɔ:ŋ1 k ^h on2/					
10. ນ້ຳເຫັນຄວາຍຫ້າໂຕ. /na:5 hen2 k ^h wa:j2 ha:4 to:2/					
11. ຂ້ອຍມີອ້າຍສອງຄົນ. /k ^h ɔj4 mi:2 ?a:j5 sɔ:ŋ1 k ^h on2/					
12. ນ້ຳເຫັນຄວາຍຫ້າໂຕ. /na:5 hen2 k ^h wa:j2 ha:4 to:2/					
13. ຂ້ອຍມີອ້າຍສອງຄົນ. /k ^h ɔj4 mi:2 ?a:j5 sɔ:ŋ1 k ^h on2/					
14. ຂ້ອຍເຈັບມືຫຼາຍ. /k ^h ɔj4 cep3 mu:2 la:j1/					
15. ມີອ້າຍຫ້າຄົນ. /mi:2 ?a:j5 ha:4 k ^h on2/					
16. ນ້ຳເຫັນຄວາຍຫ້າໂຕ. /na:5 hen2 k ^h wa:j2 ha:4 to:2/					
17. ຂ້ອຍເຈັບມືຫຼາຍ. /k ^h ɔj4 cep3 mu:2 la:j1/					
18. ຂ້ອຍມີຄວາຍສອງໂຕ. /k ^h ɔj4 mi:2 k ^h wa:j2 sɔ:ŋ1 to:2/					
19. ຂ້ອຍເຈັບມືຫຼາຍ. /k ^h ɔj4 cep3 mu:2 la:j1/					
20. ຂ້ອຍມີຄວາຍສອງໂຕ. /k ^h ɔj4 mi:2 k ^h wa:j2 sɔ:ŋ1 to:2/					
21. ນ້ຳເຫັນຄວາຍຫ້າໂຕ. /na:5 hen2 k ^h wa:j2 ha:4 to:2/					
22. ມີອ້າຍຫ້າຄົນ. /mi:2 ?a:j5 ha:4 k ^h on2/					
23. ຂ້ອຍມີອ້າຍສອງຄົນ. /k ^h ɔj4 mi:2 ?a:j5 sɔ:ŋ1 k ^h on2/					

24. ມີອ້າຍທ້າຄົນ. /mi:2 ?a:j5 ha:4 k ^h on2/					
25. ນ້າເຫັນຄວາຍທ້າໂຕ. /na:5 hen2 k ^h wa:j2 ha:4 to:2/					
26. ຂ້ອຍມີອ້າຍສອງຄົນ. /k ^h ɔj4 mi:2 ?a:j5 sɔ:ŋ1 k ^h on2/					
27. ຂ້ອຍມີອ້າຍສອງຄົນ. /k ^h ɔj4 mi:2 ?a:j5 sɔ:ŋ1 k ^h on2/					
28. ນ້າເຫັນຄວາຍທ້າໂຕ. /na:5 hen2 k ^h wa:j2 ha:4 to:2/					
29. ຂ້ອຍມີອ້າຍສອງຄົນ. /k ^h ɔj4 mi:2 ?a:j5 sɔ:ŋ1 k ^h on2/					
30. ຂ້ອຍເຈັບມືຫຼາຍ. /k ^h ɔj4 cep3 mur:2 la:j1/					
31. ຂ້ອຍມີອ້າຍສອງຄົນ. /k ^h ɔj4 mi:2 ?a:j5 sɔ:ŋ1 k ^h on2/					
32. ຂ້ອຍມີຄວາຍສອງໂຕ. /k ^h ɔj4 mi:2 k ^h wa:j2 sɔ:ŋ1 to:2/					
33. ມີອ້າຍທ້າຄົນ. /mi:2 ?a:j5 ha:4 k ^h on2/					
34. ຂ້ອຍເຈັບມືຫຼາຍ. /k ^h ɔj4 cep3 mur:2 la:j1/					
35. ມີອ້າຍທ້າຄົນ. /mi:2 ?a:j5 ha:4 k ^h on2/					
36. ນ້າເຫັນຄວາຍທ້າໂຕ. /na:5 hen2 k ^h wa:j2 ha:4 to:2/					
37. ມີອ້າຍທ້າຄົນ. /mi:2 ?a:j5 ha:4 k ^h on2/					
38. ນ້າເຫັນຄວາຍທ້າໂຕ. /na:5 hen2 k ^h wa:j2 ha:4 to:2/					
39. ຂ້ອຍມີຄວາຍສອງໂຕ. /k ^h ɔj4 mi:2 k ^h wa:j2 sɔ:ŋ1 to:2/					
40. ຂ້ອຍມີອ້າຍສອງຄົນ. /k ^h ɔj4 mi:2 ?a:j5 sɔ:ŋ1 k ^h on2/					

Appendix III: Information of Judges and Their Performance in Correctly Identifying the LPL and SLV Accents

Notes:

- Judges #1-#16 belong to the Young Generation (YG) group (16 judges)
Judges #17-#33 belong to the Middle Generation (MG) group (17 judges)
Judges #34-#42 belong to the Old Generation (OG) group (9 judges)
- Judge #2 was not selected for data analysis because her rating performance was less than 50% in correctly detecting the LPL and non-LPL (SLV) accents.

Table 15: Information of Judges Divided by Three Age Groups

Names	Ages	Academic level	Profession	Correctness of rating SLV	Correctness of rating LPL	Total scores of rating SLV and LPL in Percentage
Young Generation Group (YG)						
1. Ms. Chantaphon	15	M.5	Student	2/2	5/8	70
2. Ms. Nuk	17	M.7	student	½	2/8	30
3. Ms. Not	17	Primary	Rice farmer	2/2	5/8	70
4. Ms. Nanoi	20	P.5	Gardener	2/2	7/8	90
5. Ms. Khamphio	20	P.5	Rice farmer	½	8/8	90
6. Ms. Lunni	20	M.3	Rice farmer	2/2	4/8	60
7. Ms. La	20	M.7	Gardener	½	8/8	90
8. Ms. Saeng-alun	21	Teaching	student	½	8/8	90
9. Ms. Ueang	22	P.5	Gardener	2/2	8/8	100
10. Ms. Pha	22	P.5	Rice farmer	2/2	4/8	60
11. Ms. Noi	22	P.5	Gardener	½	7/8	80
12. Ms. Mon	22	P.4	Gardener	2/2	5/8	70
13. Ms. Nayai	23	P.5	Gardener	2/2	8/8	100
14. Ms. Suksamai	23	Vocation	Student	2/2	7/8	90
15. Ms. Wongduean	24	P.5	Gardener	0/2	8/8	80
16. Ms. Tip	24	M.6	Seller	2/2	8/8	100
Middle Generation (MG)						
17. Ms. Buawon	26	P.5	Seller	2/2	7/8	90
18. Ms. Chanthon	27	M.6	Do nothing	½	4/8	50
19. Ms. Chanpheng	27	P.5	Gardener	½	5/8	60
20. Ms. Won	28	P.5	Gardener	0/2	8/8	80
21. Ms. Dam	29	P.5	Gardener	2/2	5/8	70
22. Ms. Phai	29	P.5	Gardener	½	8/8	90
23. Ms. Mali	30	M.6	Shop seller	2/2	8/8	100
24. Ms. Lae	30	P.5	Gardener	2/2	6/8	80
25. Ms. Maniwon	31	M.6	Housewife	2/2	8/8	100

26. Ms. Phatthana	32	Vocation	Shop owner	2/2	7/8	90
27. Ms. Phonkaeo	34	Teaching	Teacher	2/2	8/8	100
28. Ms. Ton	35	P.4	Gardener	2/2	5/8	70
29. Ms. Pik	35	P.5	Gardener	2/2	8/8	100
30. Ms. Pe	37	P.5	Gardener	½	6/8	70
31. Ms. At	37	M.3	Gardener	2/2	8/8	100
32. Ms. Vilaivan	42	M.6	Hunter	2/2	8/8	100
33. Ms. Khamwan	42	P.5	Gardener	½	8/8	90
Old Generation (OG)						
34. Ms. Lin	45	P.5	Gardener	2/2	8/8	100
35. Ms. Bunlueam	48	P.5	Gardener	2/2	6/8	80
36. Ms. Chanthi	52	P.5	Rice farmer	2/2	8/8	100
37. Ms. Chanphon	52	P.5	Gardener	0/2	8/8	80
38. Ms. Amphon	55	P.6	Rice farmer	½	4/8	50
39. Ms. Wan	62	P.5	Gardener	0/2	8/8	80
40. Ms. Pinkham	67	P.2	Housewife	2/2	8/8	100
41. Ms. La	75	No academic background	Gardener	½	8/8	90
42. Ms. Suk	80	No academic background	Do nothing	2/2	8/8	100

Table 16: The performance of judges in rating the LPL and SLV accents.

Raw score of correct identification (out of 10)	score percentage	number of judges (out of 41)	number of judges (percentage)
10	100	14	31.1
9	90	9	22.0
8	80	7	14.7
7	70	6	14.7
6	60	3	7.3
5	50	2	4.9