Phonetic Features of Standard Thai Spoken by Southern Thai Speakers

สัทลักษณ์ของภาษาไทยมาตรฐาน ที่พูดโดยคนใต้

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Abstract

It is well known among Thais that southern Thai speakers have a very strong accent, which is known as *samniang thongdaeng* or "copper accent". It is easy for a Thai person to identify a Southern speaker who is speaking the Standard Thai. From my personal conversations with several non-linguist Thai speakers, each syllable in utterances produced by copper-accent speakers seems to be "equal" in length and clearly articulated. This observation may pinpoint the rhythmic pattern of copper-accent speakers. The objective of this study is therefore to investigate whether an acoustic analysis of tone and rhythm would conform with most Thai speakers' perception of the copper accent. The analysis also includes a description of consonants and vowels based on my listening judgment. The speech of three Phuket speakers was chosen for the analysis.

The initial finding, however, shows that the rhythmic patterns of the native Bangkok Thai accent and those of the copper accent

are very similar in that both of them tend to be stress-timed dialects. A combination of other phonetic elements, such as vowels, might therefore be the main characteristic of the copper accent.

บทคัดย่อ

สำเนียงภาษาไทยมาตรฐาน (ไทยกรุงเทพฯ) ของคนใต้มีลักษณะเฉพาะซึ่งเรียกกันว่าสำเนียงทองแดง สำเนียงนี้มีเอกลักษณ์เฉพาะตัว จนทำให้คนไทยทั่วไปสามารถทราบได้ทันทีว่าคนที่พูดภาษาไทยถิ่นกลางนั้นเป็นคนใต้หรือไม่ จากการที่ผู้วิจัยสนทนากับคนไทยที่มิใช่นักภาษาศาสตร์ พบว่าหลายคนเห็นตรงกันว่าสำเนียงทองแดงนั้นฟังดูคล้ายกับมีการออกเสียงคำโดดเท่า ๆ กัน ความเห็นเช่นนี้อาจชี้ให้เห็นว่าตามหลักสัทศาสตร์สำเนียงทองแดงน่าจะมีประเภทของจังหวะแบบใช้พยางค์เป็นเครื่องกำหนด (syllable-timed rhythm) ผู้วิจัยจึงต้องการวิเคราะห์ว่าแท้จริงแล้วสำเนียงทองแดงมีจังหวะประเภทดังกล่าวหรือไม่ นอกจากการวิเคราะห์เรื่องจังหวะแล้ว ผู้วิจัยยังได้ศึกษาลักษณะของเสียงพยัญชนะ สระ และเสียงวรรณยุกต์ของสำเนียงทองแดงด้วย ผลการศึกษาพบว่าเสียงพยัญชนะและเสียงวรรณยุกต์ในสำเนียงทองแดงไม่ต่างจากภาษาไทยถิ่นกลาง ส่วนเสียงสระมีการแปรไปจากภาษาไทยมาตรฐานบ้างเล็กน้อย นอกจากนี้ สำเนียงทองแดงมีจังหวะแบบใช้การลงเสียงหนักเป็นเครื่องกำหนด (stress-timed rhythm) ซึ่งไม่เป็นไปตามสมมติฐานที่ตั้งไว้ ดังนั้น สัทลักษณะอื่น ๆ ที่มิใช่พยัญชนะ วรรณยุกต์ และจังหวะ เช่น เสียงสระ อาจเป็นลักษณ์โดดเด่นของสำเนียงทองแดง

1. Introduction

The Standard Thai (or ST) spoken by Southern Thai speakers is known among Thais as having 'copper accent' (*สำเนียงทองแดง* in Thai); henceforth; the term *copper-accent ST* will be used throughout this paper. Diller (1979: 79) defines it as 'copper; a base-metal-like sort of speech.' It is this accent that characterizes people from the south.

It is not known if level of education, age, and other social factors would have any effect on this accent, since in everyday life it is heard among the speeches of many well-known politicians, who have resided in Bangkok for several years, as well as those of street vendors with lower educational backgrounds. Prior to this study I had interviewed twelve second-year navy cadets, born and raised in different Southern provinces, with the age of 19-23 to see if young Southern speakers would have the copper accent in their Standard Thai speech. I found that everyone speaks clear Standard Thai. To conclude that the copper accent ST has gradually disappeared among younger generations might be an overgeneralization. A study of the copper-accent ST spoken by young Southern Thais with lower educational levels and other controlled variables should be further conducted.

Diller (1979: 80) notes that the copper accent occurs when Central Thai tones are combined with Southern (or mixed Southern and Central Thai) segments and lexical semantics. These linguistic features cause certain attitudes towards the speaker *(proscribed* $t^{h}ɔ:ŋdɛ:ŋ$ [ทองแดง] or *proscribed* $nɤ̀:$ [เหน่อ] in Diller's terms). As a native speaker of Bangkok Thai (or the Standard Thai), however, it is quite clear to me that segments (i.e., consonants and vowels) and tones are not the only phonological components that represent the copper accent. In fact, the copper-accent ST speech is still auditorily detectable even when a speaker produces the correct standard Thai segments and tones. Other phonetic features such as rhythm should therefore be investigated as well. Some (if not many) Thai people including myself feel that the copper-accent ST sounds like a machine gun, with a clear-cut syllable-per-syllable kind of

pronounciation. If our perception conforms with their speech production, our impression towards the copper-accent ST might in fact derive from its true syllable-timed type of rhythm. In this paper, I examine consonants, vowels, tones, and rhythm of three copper-accent informants to see if they are phonetic features that characterize the copper-accent ST speech. The Standard Thai speech produced by Southern Thai speakers of Muang District, Phuket province is the representative of the copper accent.

2. Some Phonological Aspects of the Phuket Sub-Variety

Attention must be drawn on a phonological comparison between Standard Thai and the Phuket sub-variety of Southern Thai before investigating the informants' copper-accent speech. Their phonological differences lie in segments as well as tones and syllabification.

2.1 Consonants and Vowels

Like other southern Thai varieties, the Phuket sub-variety has twenty-one consonant phonemes, with an additional /ɲ/ in the Thep Kasat sub-district of Thalang district (Thammapradit 2524: 52). The consonants are generally the same as those of Bangkok Thai. Thammapradit proposes the voiceless alveolo-palatal affricates /tɕ/ and /tɕ^{h}/ in her consonant inventory. However, from my own observation these two phonemes are in fact voiceless (unaspirated and aspirated) palatal stops /c/ and /c^{h}/, as are also found in Diller's consonant inventory (1976: 29-30). Consonant clusters are also the same as in Bangkok Thai; /pl-/, /pr-/, /p^{h}l-/, /p^{h}r-/, /kl-/,

/kr-/, /kw-/, /k^hl-/, /k^hr-/, /k^hw-/, except for /ml-/ and /mr-/ which are special characteristics of southern consonant clusters. From my personal conversations with many Phuket speakers, the consonant clusters /ml-/ and /mr-/ no longer exist in the Phuket variety. They are uttered by the elderly only in some rare occasions. The occurrence of Phuket final consonants are also the same as in standard Thai, which are /-p/, /-t/, /-k/, /-m/, /-n/, /-ŋ/, /-w/, /-j/, and /-ʔ/.

Piyatham[1] (data taken from Thampradit 2524: 48) suggests seven short vowels in the Phuket subdialect; /i/, /ɛ/, /ɯ/, /ɤ/, /a/, /u/, and /ɔ/. The vowels /e/ and /o/ in Standard Thai are missing, although in terms of their long counterparts all nine of them exist in the Phuket subvariety. Thammapradit's study, however, indicates nine short vowels and their long counterparts, altogether eighteen vowels. She also discusses the diphthongs /ei/ and /ou/ in Phuket Thai, which are sensitive to tone and syllable structure. The Phuket Thai /ei/ and /ou/ correspond to Standard Thai /i:/ and /e:/ respectively in smooth open syllable with the 452, 342, and 21 tones.

2.2 The Tonal System

The studies of Phuket tonal systems have been mentioned in Egerod (1961, 1972)[2] and Diller (1976). Among Thai linguists (who are native speakers of Southern Thai dialects themselves), the tonal discussion can be found in Piyatham (1970), Ruangwiset (2520), and

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[1] Piyatham, Somchit. 1970. A Feature Approach to the Phonology of Phuket, a Southern Thai Dialect. Master's thesis, Department of Phonetics and Linguistics, School of Oriental and African Studies, University of London.

[2] Data from Piyatham (1970) and Egerod (1961) are, unfortunately, not accessible.

Thampradit (2524). Like Ruangwiset (2520) who claims seven tones of Phuket variety, Diller (1976) proposes seven tones in the Southern variety of Krabi, Phuket, and Phangnga Province. Thammapradit (2524) and Egerod (1972), on the other hand, propose that there are six tones in the Phuket variety. In this paper, the data of the citation tones of the Phuket variety from three female informants residing in the Muang district was collected[3]. The findings were similar to those of Thammapradit's and Egerod's. The tonal systems of each study are adapted and presented here in the so-called 'tone box', which shows the correlation between modern Thai tones and the proto-Tai tones, as well as Proto-initial consonants.[4] The comparisons of each study, including mine, are as follows:

<table>
<tr><th>*Initials/*Tones</th><th>*A</th><th>*B</th><th>*C</th></tr>
<tr><td>*1</td><td colspan="2" rowspan="2">452</td><td>443/33</td></tr>
<tr><td>*2</td><td rowspan="2">33</td></tr>
<tr><td>*3</td><td colspan="2">342</td></tr>
<tr><td>*4</td><td>31</td><td>23</td><td>22/21</td></tr>
</table>

Figure 1: Southern Thai tones of Krabi, Phuket, and Phangnga provinces (adapted from Diller (1976: 261))

*The symbol * refers to 'proto-'. Thus, *A, *B, and *C imply proto-tones A, B, and C, whereas *1, *2, *3, and *4 imply proto-voiceless aspirated initials, proto-voiceless unaspirated initials, proto-preglottalized initials, and proto-voiced initials respectively.*

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[3] See Section for the methodology in details.

[4] See Tingsabadh (2001) for further explanation of the tone box.

*Initials/*Tones	*A	*B	*C	*DL
*1	454’		44	
*2	343’			
*3				
*4	2’1’	24	22	24

Figure 2: Southern Thai tones of Phuket, and Phangnga provinces (adapted from Thammapradit 2524: 121). Thampradit uses tone letters to inditcate tonal manifestations. I have changed her tone letters into tone numbers to be in accord with Diller’s tonal system. The’ symbol indicates half line of number.

*Initials/*Tones	*A	*B	*C	*DL	*DS
*1	High-	Fall	Mid-	even	High-even
*2	Mid-	Rise-fall			Mid-rise
*3					
*4	Low-fall	Low-rise	Low-even	Low-rise	Low-even

Figure 3: Southern Thai tones of Phuket (adapted from Egerod 1972).

*Initials/*Tones	*A	*B	*C	*DL	*DS
*1	High-	Rise-fall(4’53)	Mid (33)	High (43’)	High (3’4)
*2	Mid-	Rise-fall (232’)			Mid (33)
*3					
*4	Mid-fall (2’1)	Low-rise (23)	Low (32’)	Low-rise	

Figure 4: My finding of Phuket citation tones conducted from three female informants.

The following charts indicate the pitch contour of each citation tone:

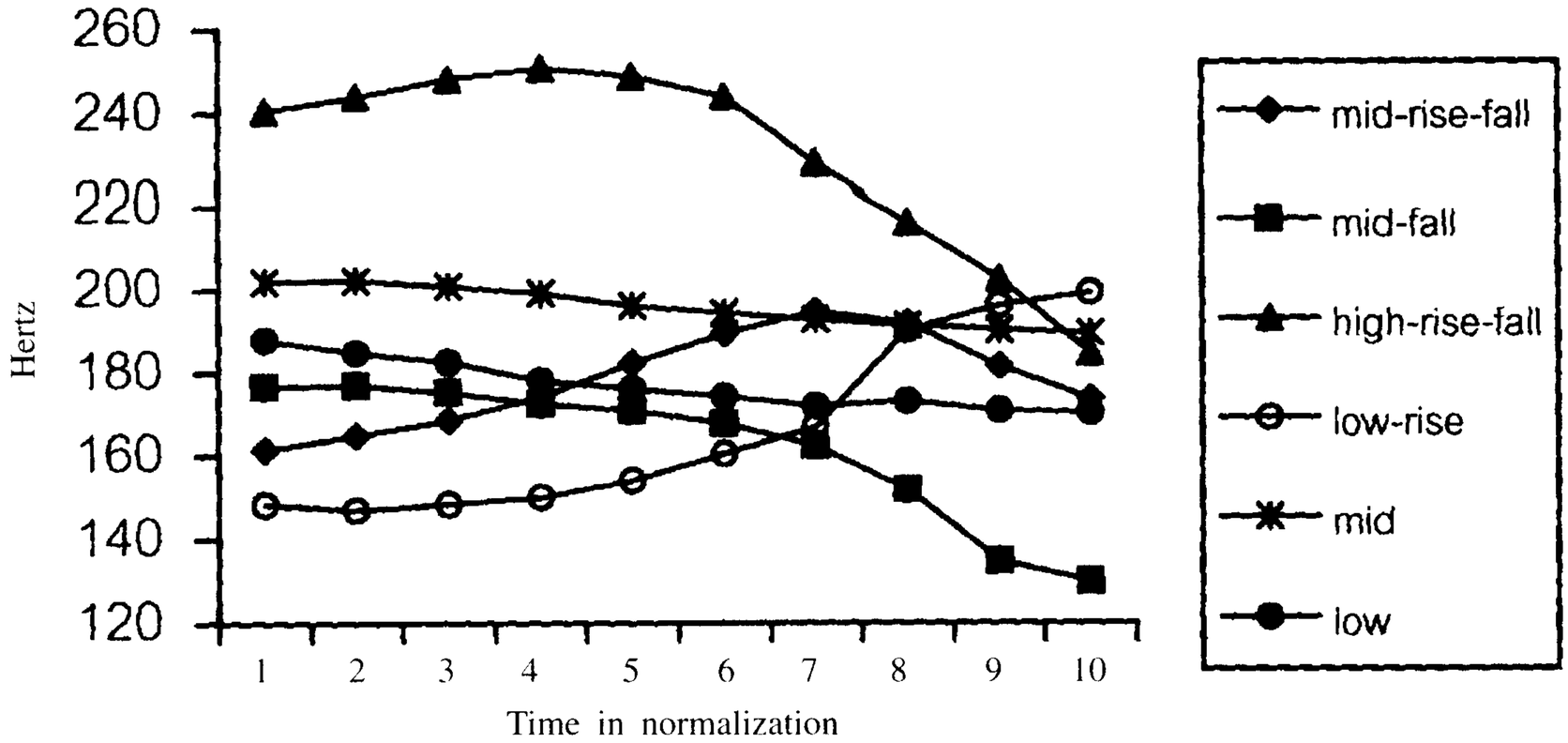

Figure 5: Citation tones of smooth syllables of Phuket variety

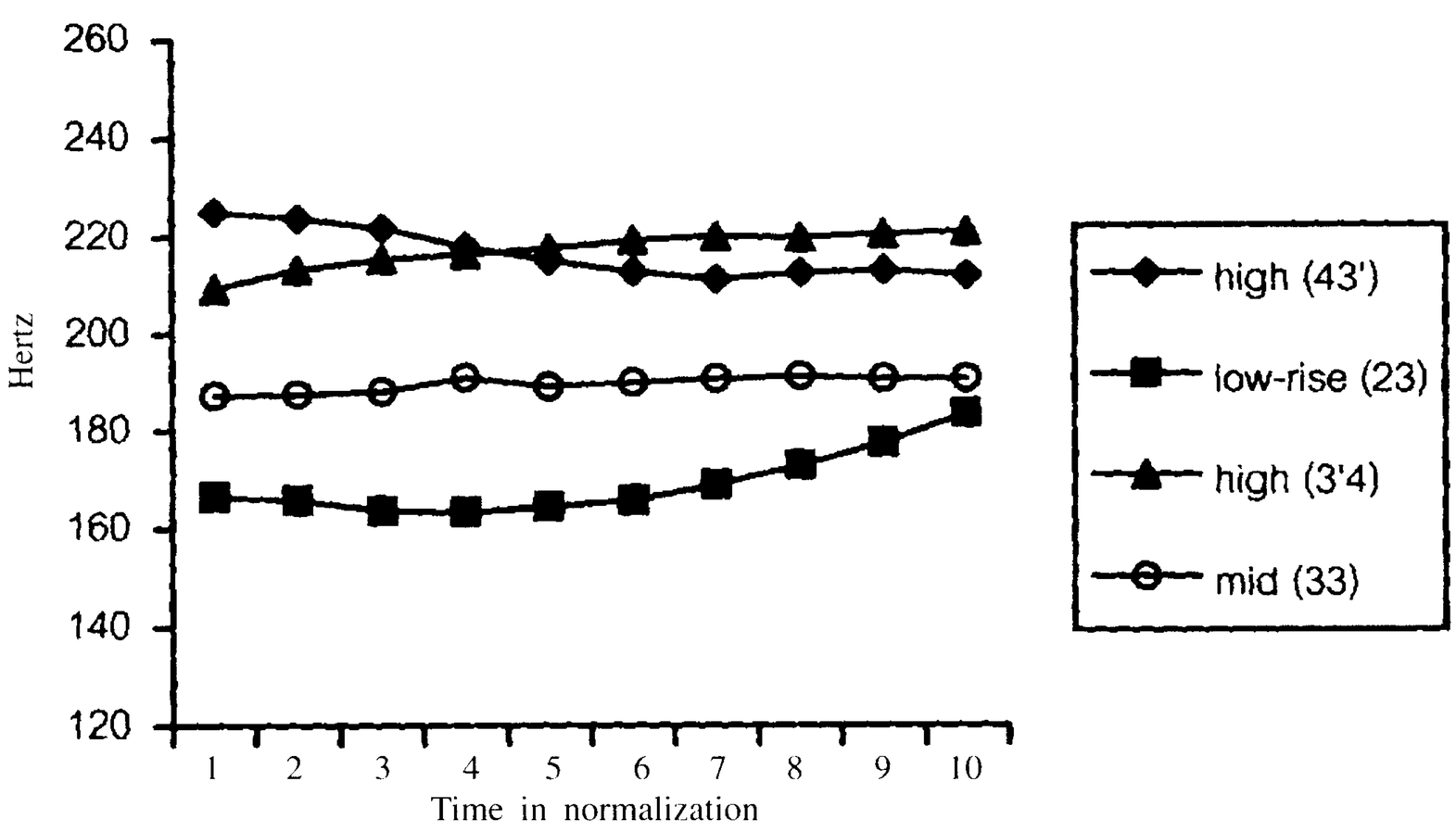

Figure 6: Citation tones of checked syllables of Phuket variety

From Figures 1, 2, 3, and 4, the difference between the tonal systems of the Phuket variety proposed by these three linguists, including mine, can be found in the tonal level as well as their pitch contour. For example, Diller's 31 and my mid-fall tone in the *A4 box are equivalent to Thammapradit's and Egerod's low-fall. On the other hand, Diller's, Thammapradit's, and my high-rise-fall

(452, 454', and 4'53 respectively) are high-fall in Egerod's system. Also, a tone split occurs between *C1 and *C2-3 in Diller's, whereas such split is not found elsewhere. My findings show a different tonal split in the DL and DS boxes. Nevertheless, these phonetic differences, particularly in Box A, B, and C, should not cause any controversial issues in this study, since in any case it would not make any difference in the speech utterances of the copper-accent ST. The proposal of the mid-fall tone (31) and low-fall (21), or the difference between the 44 tone and the 33 tone, for example, might not be phonetically significant. The speech variety of Phuket has both level and contour tones, similarly to the tones of Bangkok Thai.

2.3 Syllabification

We all know that Standard Thai is a monosyllabic language, with the influx of polysyllables from the original Indic root words and polysyllabic words that have undergone some morphological processes. This generalization, I think, cannot be applied to the matter of syllabification in Southern Thai dialects. Diller (1976: 45) states that a large number of standard Thai bisyllabic words beginning with Ca- (where C refers to Consonant) correspond to Southern Thai monosyllables e.g. tala:t - la : t "market", pratu: - tu: "door", map^{h}ra:w -p^{h}ra:w "coconut", and perhaps one can add many more such correspondences onto the list. When we look at Southern Thai polysyllabic words, we see that they are not of the type beginning with the syllable -Ca-. Instead, we find polysyllables that are of the compound type. Many ST trisyllabic words that have the medial syllable -Ca- correspond to Southern Thai bisyllables with the deletion of the syllable -Ca-, as in nalika:-naka: "clock", saŋkasi: -saŋsi:

"galvanized iron" (Diller 1976:48). The medial -Ca- which is unstressed in polysyllables is what Bee (1975) calls linker-syllables. Bee reports that the linker-syllable is unstressed and neutralized as a mid tone. I, therefore, suspect that the non- (or very limited) existence of words with syllable Ca of some sort (whether initially or medially) in Southern dialects may be a crucial factor that determines the rhythmic pattern that is different from that of Standard Thai. Even when the speeches of Phuket speakers were listened to by non-Southern Thai hearers, they commented that their speeches sounded like "a machine gun", with "strange, equally uttered timing for each syllable" as mentioned in Section 1. This observation by non-linguists (including myself) seems to suggest that the speech rhythm of these Phuket speakers might play the most crucial part in the hearers' perception. However, the result from the rhythmic patterns surprisingly did not match such expectation, as will be shown later in Section 4.4.

3. Methodology

3.1 Informants

Data was collected from thirteen female residents of the Muang distict in Phuket province. They were all born and raised in Phuket, and have never resided elsewhere. They are between 40-75 years old. All of them studied no higher than the primary-educational level (Prathom 6). It is noteworthy that these speakers were all Thai-Fokenese bilinguals. Historically, most Phuket residents were descendants of Fokanese Chinese from Penang and Singapore.

The acoustic analysis was investigated from only three informants, whose speeches were most clearly perceived to be copper-accent ST by thirty Thai listeners.

3.2 Data Collection

The data is composed of spontaneous speeches of the copper-accent ST spoken by thirteen speakers. A speech lasts approximately 5 minutes. The informants were asked to tell any story that would not reveal their hometown, since some part of their speech would later be selected as utterance tokens for the listening test. Most of the informants chose to talk about their trip abroad. This data collection was aimed to investigate segments, tones, and rhythm of connected speech of the copper-accent ST. I also collected citation forms that were adapted from Tingsabadh (2001) with some adjustments. There were 20 words with all possible combinations of tones and syllable structures. Nine of them were basic tone sets as suggested by Tingsabadh; all begin with the initial /kh-/ and were followed by a long vowel /a:/ without any final consonant for smooth syllable structure. The same consonant and vowel applied to checked syllables, except that they were followed by the final /-t/. These nine syllables were *kʰa*: 'to be stuck', *kʰà*: 'galangal' *kʰâ*: 'I', *kʰa'*: 'to engage in trade', *kʰǎ*: 'leg', *kʰà:t* 'to be torn', *kʰâ:t* 'to tie', *kʰàt* 'to polish', *kʰa't* 'to steer (a boat)'. Additional words were *ka*: 'crow', *da:w* 'star', *kàj* 'hen', *bà*: shoulder, *jâ*: 'grandmother', *pâ*: 'aunt', *bâ*: 'crazy', *pà:k* 'mouth', *ʔà:p* 'to wash', *kàt* 'to bite', and *bàt* 'to shake (hands)'. The eleven additional words were to analyze their dialectal tonal system as well as the ability to produce all Standard Thai tones with different syllable structure.

3.3 Procedure

The Sony MiniDisc Digital Recorder (MZ-R50) was used as a recording device. The recording took place at each informant's house

in the Muang district of Phuket. The listening test was later conducted in order to verify the copper accent. The selected data from five Phuket informants with high-quality recording, including some utterance tokens produced by five female Bangkok native speakers with relatively the same ages, were randomly selected as stimuli. Thirty Thammasat University students were asked to participate in a listening test to identify the speeches of the copper accent, to insure that these informants' speeches were perceived as the copper accent by any Thai listeners. That is, the listeners were asked to listen to the sentence utterances randomly uttered by Phuket speakers and Bangkok Thai speakers and tick on the answer sheet (see Appendix 1). The results show that all of their speeches were identified as copper accent by more than 70% of the listeners. Then, the copper-accent utterances of only three female speakers with the best-quality recording and highest scores for copper accent identification (92%, 87%, and 70%) were selected for the acoustic analysis. For ease of explanation let me call them (1) "Aunty Ngim", (2) "Aunty Maria," and (3) "Aunty Pisamai".

The PRAAT program was used for acoustic analysis. First, the copper-accent ST tones of citation forms were carefully extracted and normalized. Then, the copper-accent ST tones of connected speech were normalized. The duration of each syllable was measured to determine rhythmic feet in a later section.

4. Results and Discussion

The consonants and vowels were described on the basis of my listening judgment. I did not analyze them acoustically because they

are not my focus of attention, as I predict that other phonetic features like tone and rhythmic patterns might be the main components that characterize the speech of the copper-accent ST.

4.1 Consonants

ST /r/ was pronounced [l] in almost all of its occurrences. In a very rare case it was replaced by a tap [ɾ]. No consonant clusters were detected in their spontaneous speeches. The standard Thai /tɕ/ is obviously [c] in Aunty Ngim's speech. The other two informants produced [tɕ] although [c] was heard occasionally. The phoneme /s/ was produced alternately with flat fricative [θ], similarly to many ST speakers. Phoneme /k/ was sometimes voiced between vowels.

4.2 Vowels

Some long monophthongs in ST correspond to their short counterparts as in i: → i (/ci:n/→ [cin] "Chinese") a: → a (/cà:k/ → [càk] "from"). Strangely enough the ST short /a/ also corresponds to the copper-accent long [a:]; for example, ST [kʰáu] 'he' is [kʰá:u] in the copper-accent ST. Moreover, several words carrying short monophthongs, particularly /ɛ/ in ST correspond to long vowels in the copper-accent ST; for example, ST /kʰɛ̌ŋ/ → [kʰɛ̌:ŋ] "hard, stiff" or ST /hɛ̀ŋ/ → [hɛ̀:ŋ] "place". The ST short and long vowels /e/ and /o/ correspond to lowered [e̬] and [o̬], whereas the ST /ɛ/ and /ɔ/ are raised and merge with [e̬] and [o̬]. Therefore the words in ST that have /e/-/ɛ/ and /o/-/ɔ/ distinction, as in /kèp/ "to collect" and /tɛ̀:/ "but", and /nók/ "bird" and /kʰɔ̌:ŋ/ "thing", have the same vowels in the copper-accent ST, as in [kè̬p] -[tè̬:], and [nó̬k] - [kʰǒ̬:ŋ]. The first half of the diphthongs /ai/ and /au/ is

raised and becomes more centralized, as in words like [ləu] 'we' or [pəi] "go".

The differences in the vowel quality between ST and the copper-accent ST are much more complicated than I thought before this study was conducted. Further thorough acoustic studies should be done on vowels.

4.3 Tones

Tingsabadh and Deeprasert (1997) have studied tones of citation forms as well as those of connected speech. Their findings clearly point out tonal deviation of different syllable structures in connected speech produced by an ST speaker. It is thus necessary to investigate the copper-accent speakers' ST tones in isolation as well as in connected speech.

4.3.1 Tones in citation form

Tremendous acoustic analyses have been done on Standard Thai tones, mostly the five ST tones on citation forms (e.g. Abramson 1962, Gandour 1975, Tingsabadh and Deeprasert 1997 and many others). Most of these previous research studies were in agreement in terms of ST tone height and contour. Figure 7 shows Tingsabadh and Deeprasert's recent work on ST tones in citation form, compared with the ST tones uttered by my three copper-accent informants as shown in Figure 8 and 9:

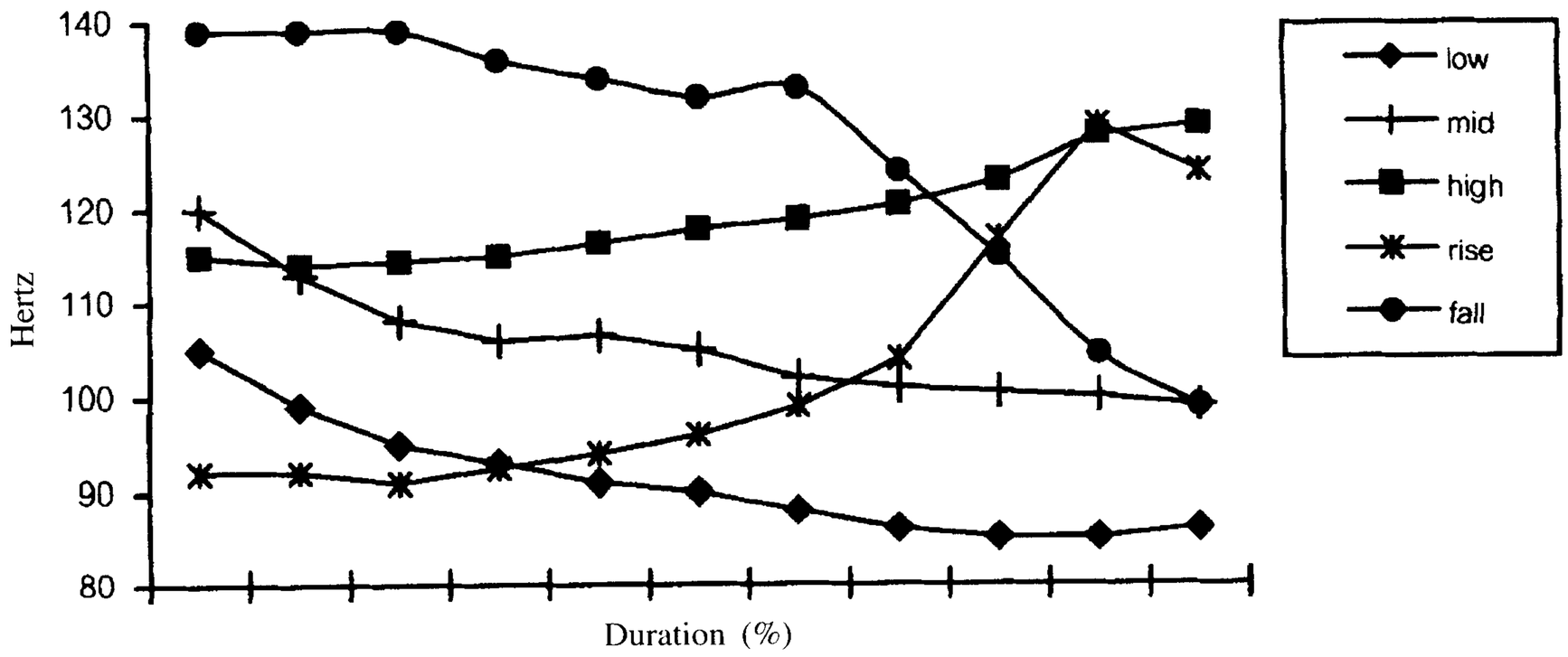

Figure 7: Average fundamental frequencies of five ST tones on citation forms produced by an educated male native speaker of standard Thai

Adapted from Tingsabadh and Deeprasert 1997: 302

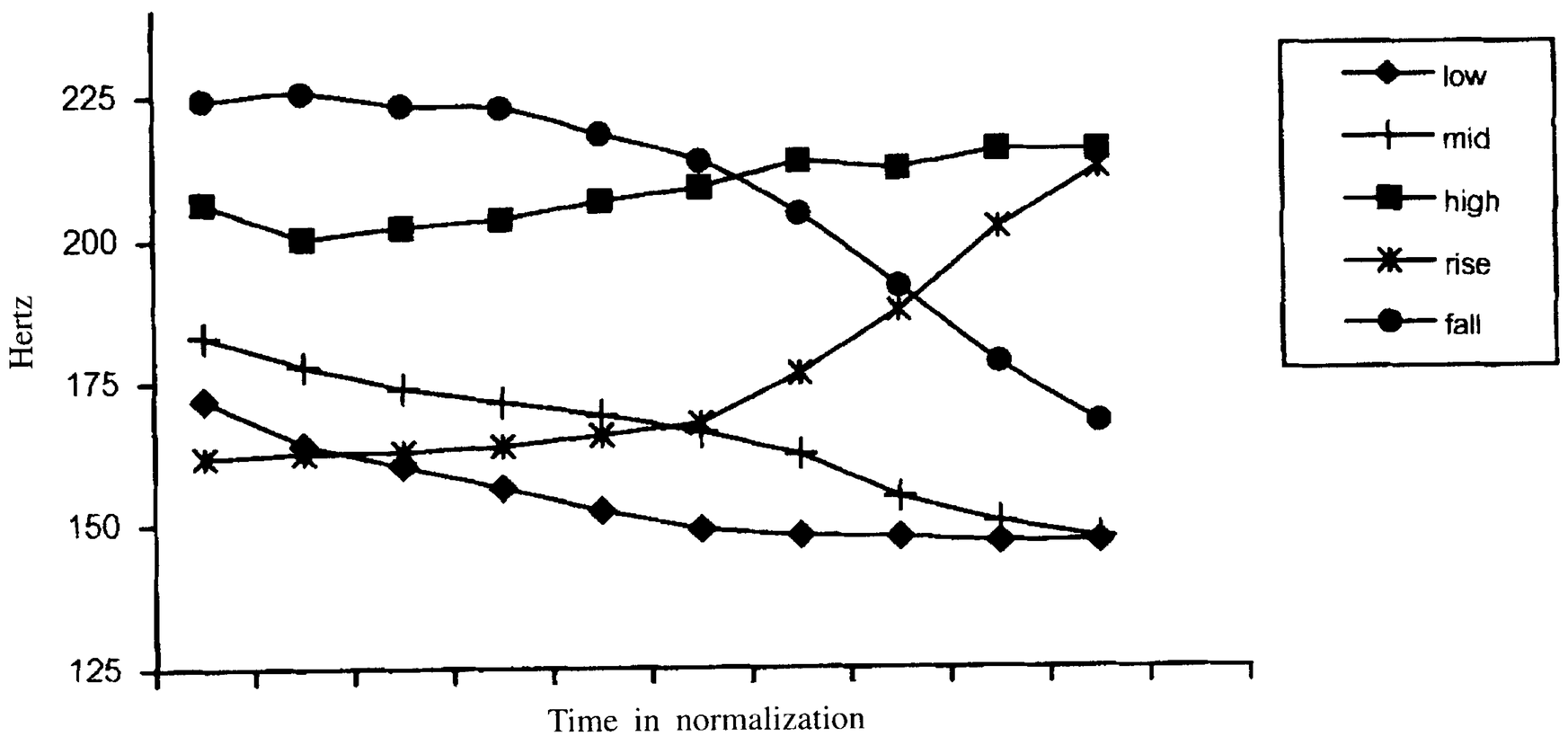

Figure 8: Average fundamental frequencies of all five ST tones on citation forms produced by three copper-accent speakers

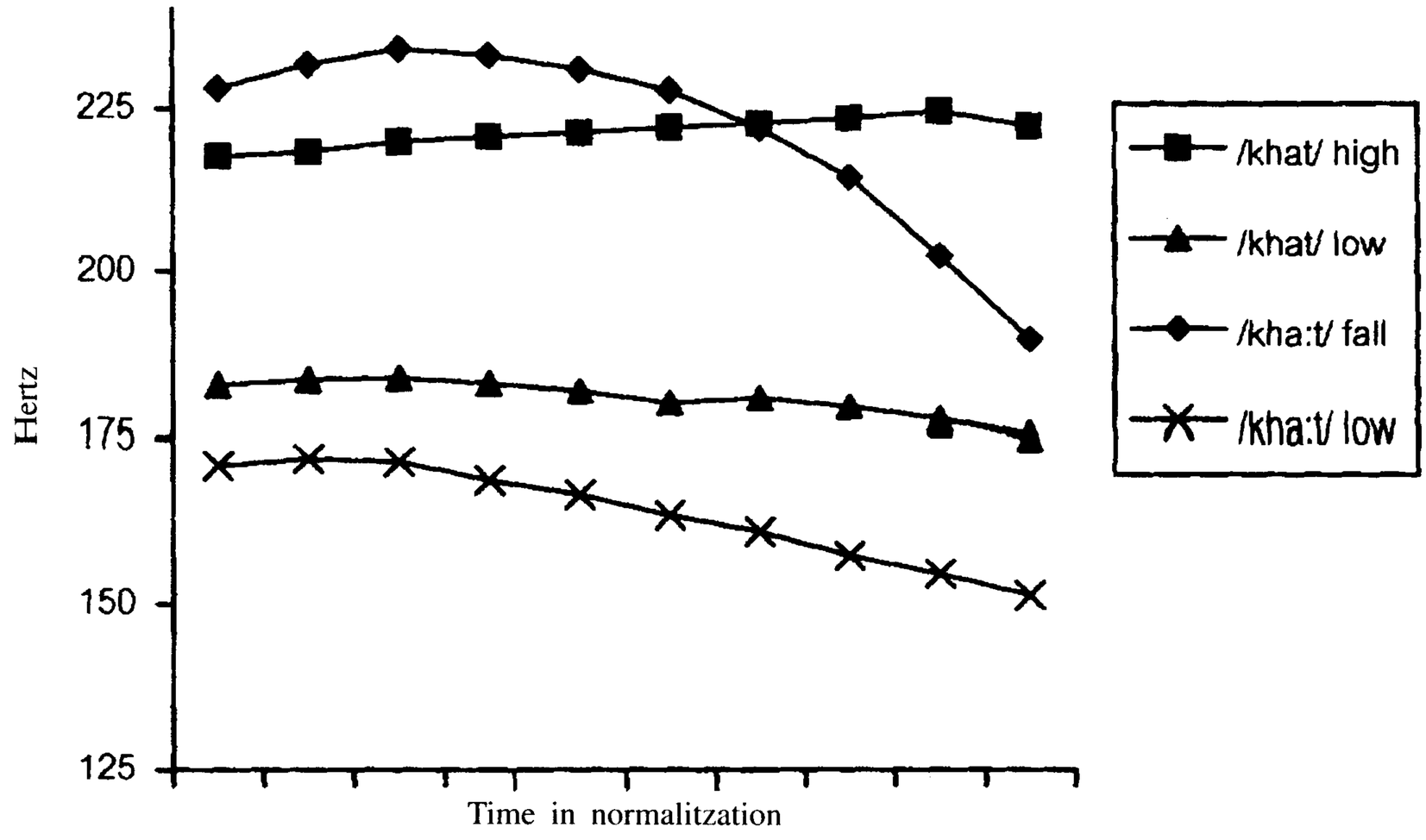

Figure 9: Average fundamental frequencies of three ST tones of checked syllables /khat/ and /kha:t/ in citation forms produced by three copper-accent speakers

From Figure 8 and 9, it can be seen that the copper-accent speakers produce the five ST tones accurately. Each tone shows its normal realization; the low, mid, and high tones are almost truly level in shape. The falling and rising tones also show their full contour just like the ST tones of citation forms uttered by the male native ST speaker in Figure 7. The copper-accent speakers' low and mid tones (Figure 8) look as if their placement in tone space is quite close to each other, compared to the corresponding low and mid tones of the male ST speaker in Figure 7. But in fact this delusion is misguided by the difference between the tone range of these two groups of speaker. A male speaker typically has a lower frequency range than a female speaker. This male ST speaker, particularly in Figure 7, has a frequency span of only about 60 Hz whereas the copper-accent speakers' frequency range spans approximately 80 Hz. Figure 9 shows that the high and falling tones of checked syllables in citation forms occupy the frequency range of above 200 Hz in tone space. The vowel length difference may affect fundamental frequencies in checked citation forms.

4.3.2 Tones in connected speech

Each citation tone is shown in contrast with the other two contexts, stressed and unstressed position in connected speech, as follows:

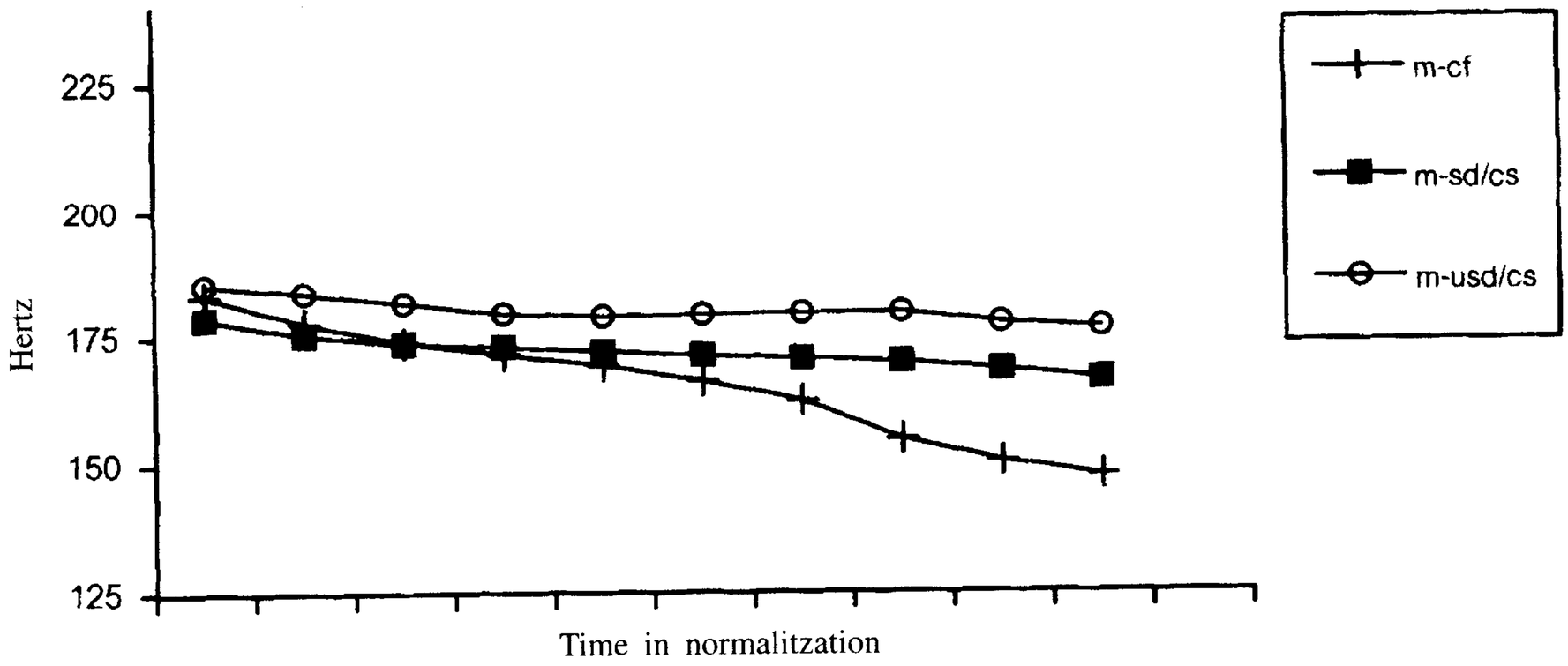

Figure 10: Average fundamental frequencies of ST mid tones on citation forms and connected speech in stressed/unstressed position produced by three copper-accent speakers

Note: M-cf is a mid tone in citation form. M-sd/cs is a mid tone on stressed syllables in connected speech. M-usd/cs is a mid tone on unstressed syllables in connected speech.

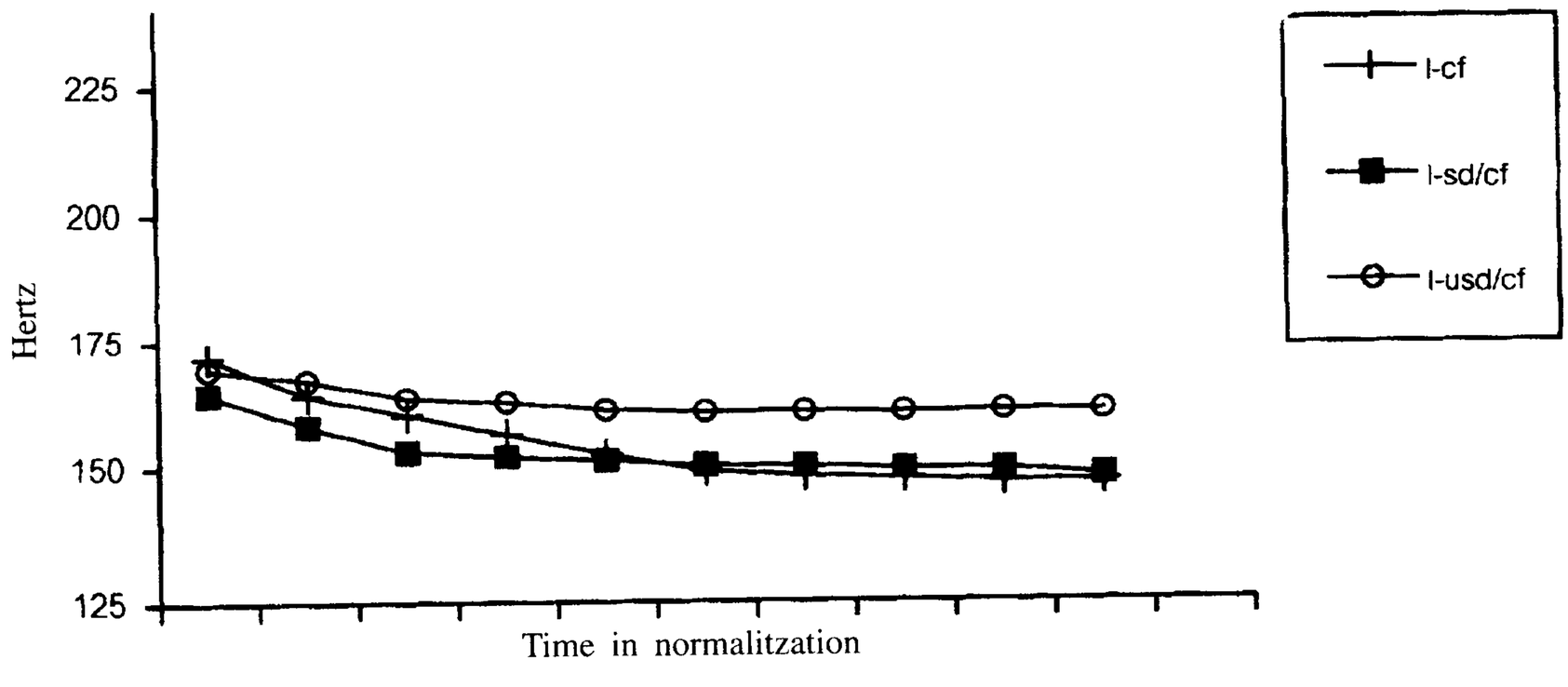

Figure 11: Average fundamental frequencies of ST low tones on citation forms and connected speech in stressed/unstressed position produced by three copper-accent speakers

Note: L-cf is a low tone in citation form. L-sd/cs is a low tone on stressed syllables in connected speech. L-usd/cs is a low tone on unstressed syllables in connected speech.

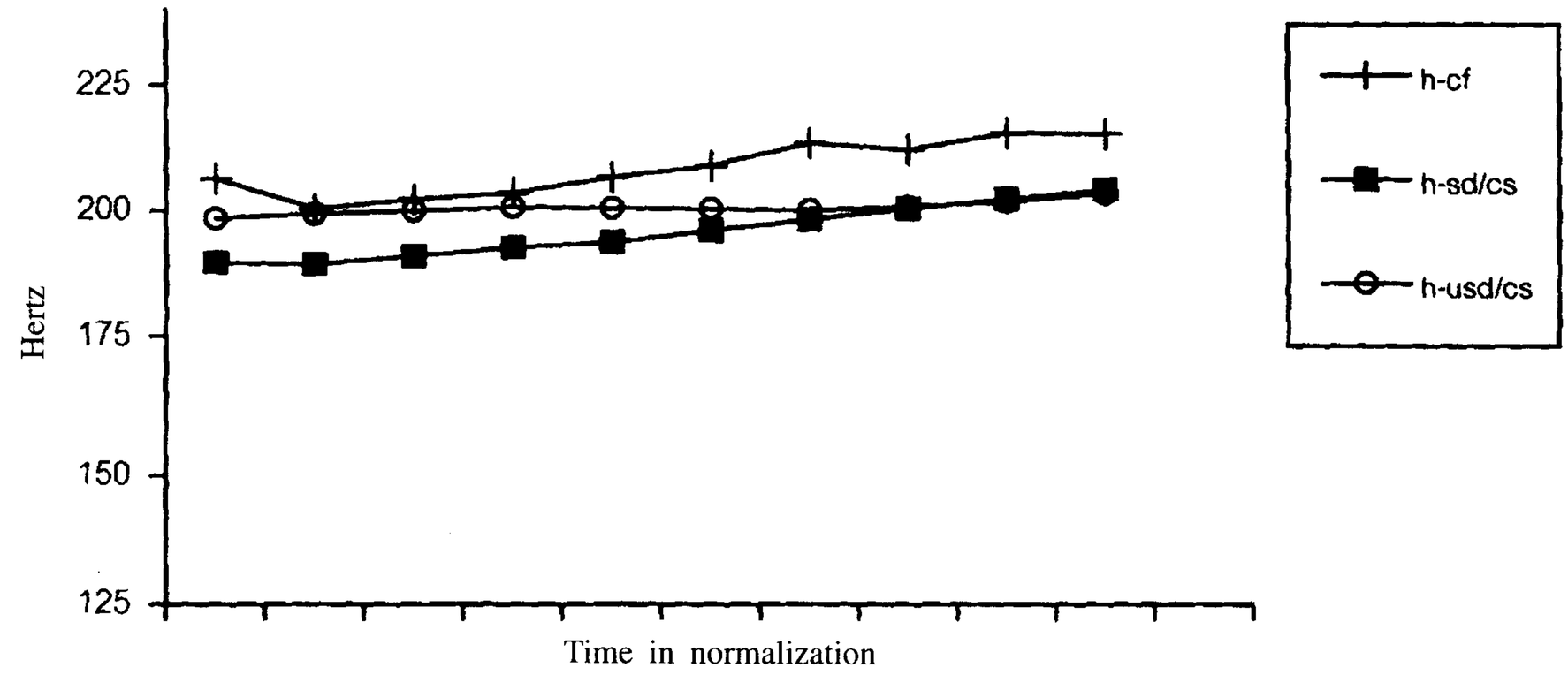

Figure 12: Average fundamental frequencies of ST high tones on citation forms and connected speech in stressed/unstressed position produced by three copper-accent speakers

Note: H-cf is a high tone in citation form. H-sd/cs is a high tone on stressed syllables in connected speech. H-usd/cs is a high tone on unstressed syllables in connected speech.

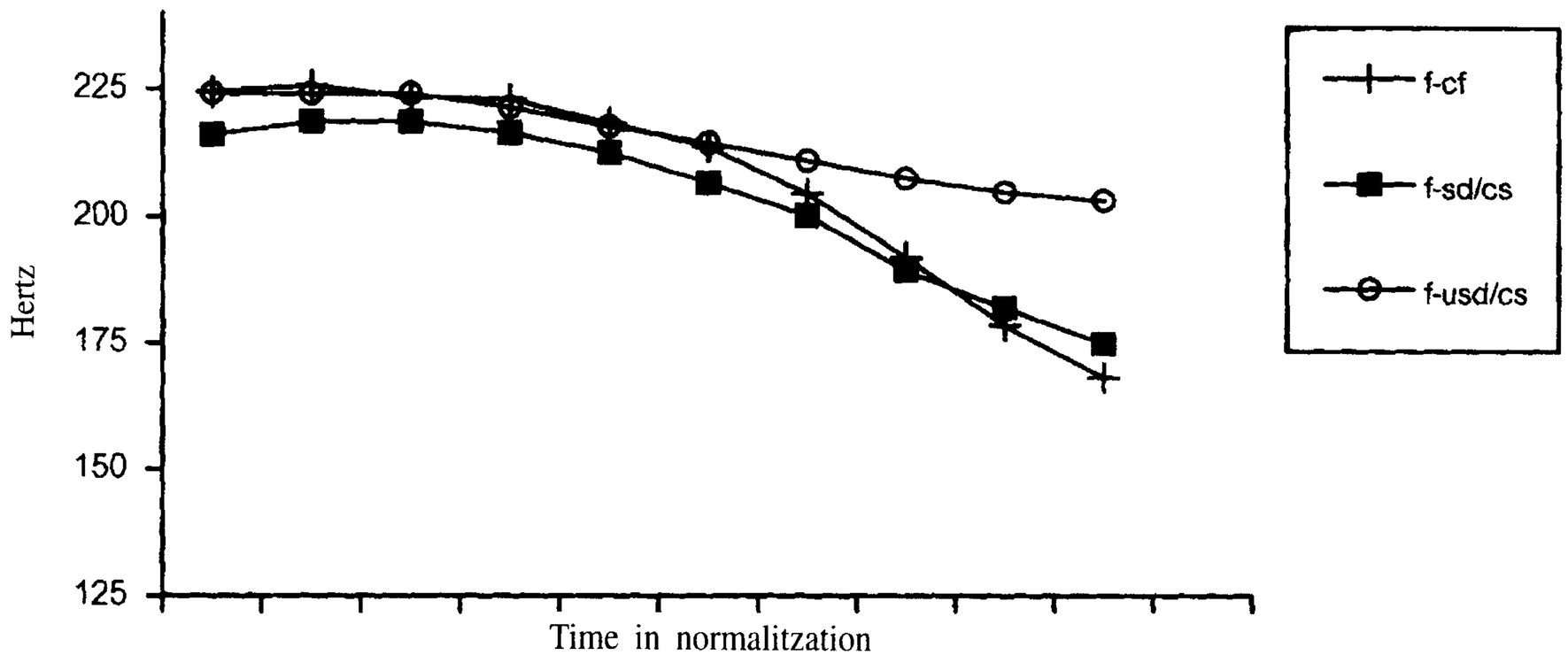

Figure 13: Average fundamental frequencies of ST falling tones on citation forms and connected speech in stressed/unstressed position produced by three copper-accent speakers

Note: F-cf is a falling tone in citation form. F-sd/cs is a falling tone on stressed syllables in connected speech. F-usd/cs is a falling tone on unstressed syllables in connected speech.

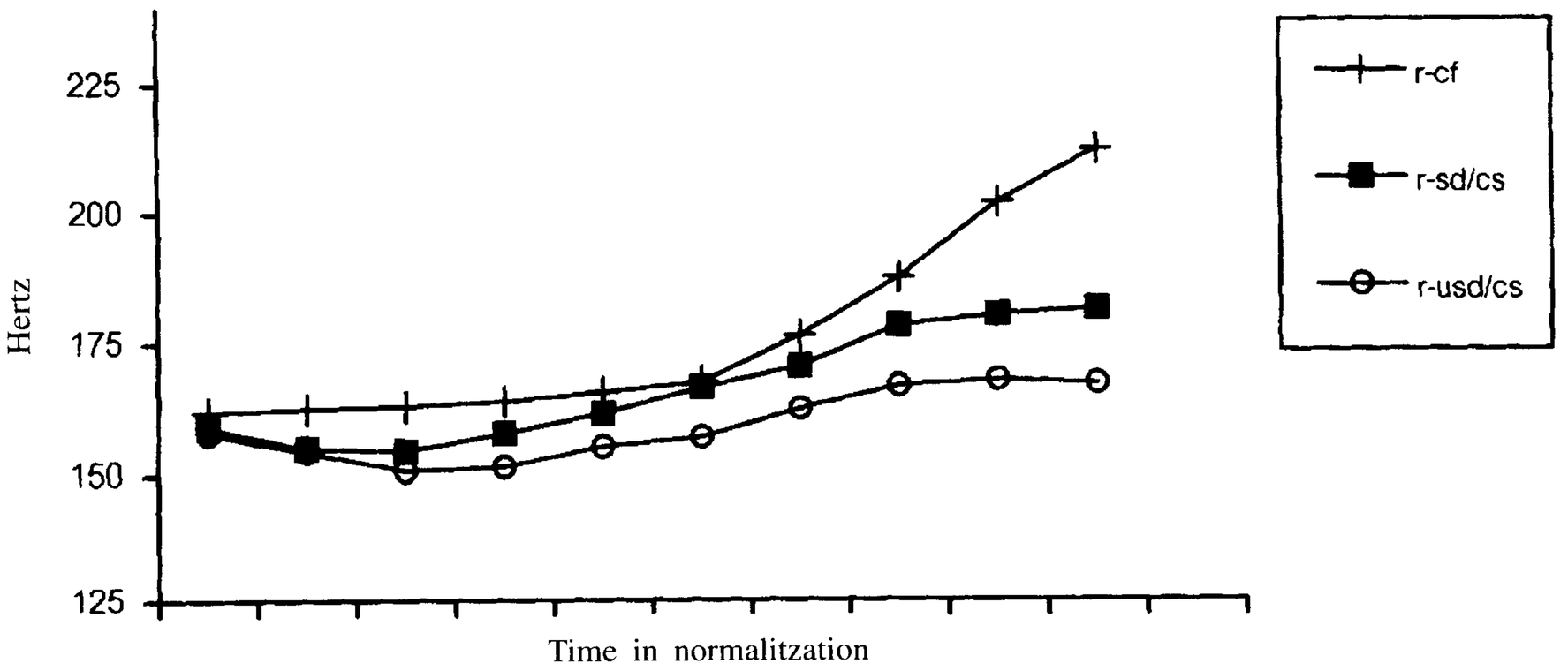

Figure 14: Average fundamental frequencies of ST rise tones on citation forms and connected speech in stressed/unstressed position produced by three copper-accent speakers

Note: R-cf is a rising tone in citation form. R-sd/cs is a rising tone on stressed syllables in connected speech. R-usd/cs is a rising tone on unstressed syllables in connected speech.

The three level tones in Figure 10, 11, and 12 do not differ much in different contexts, although one might notice that the tone contours of mid and high tone in citation forms become more level in shape in connected speech. The falling and rising tones lose their contour shape in an unstressed position of connected speech. This finding

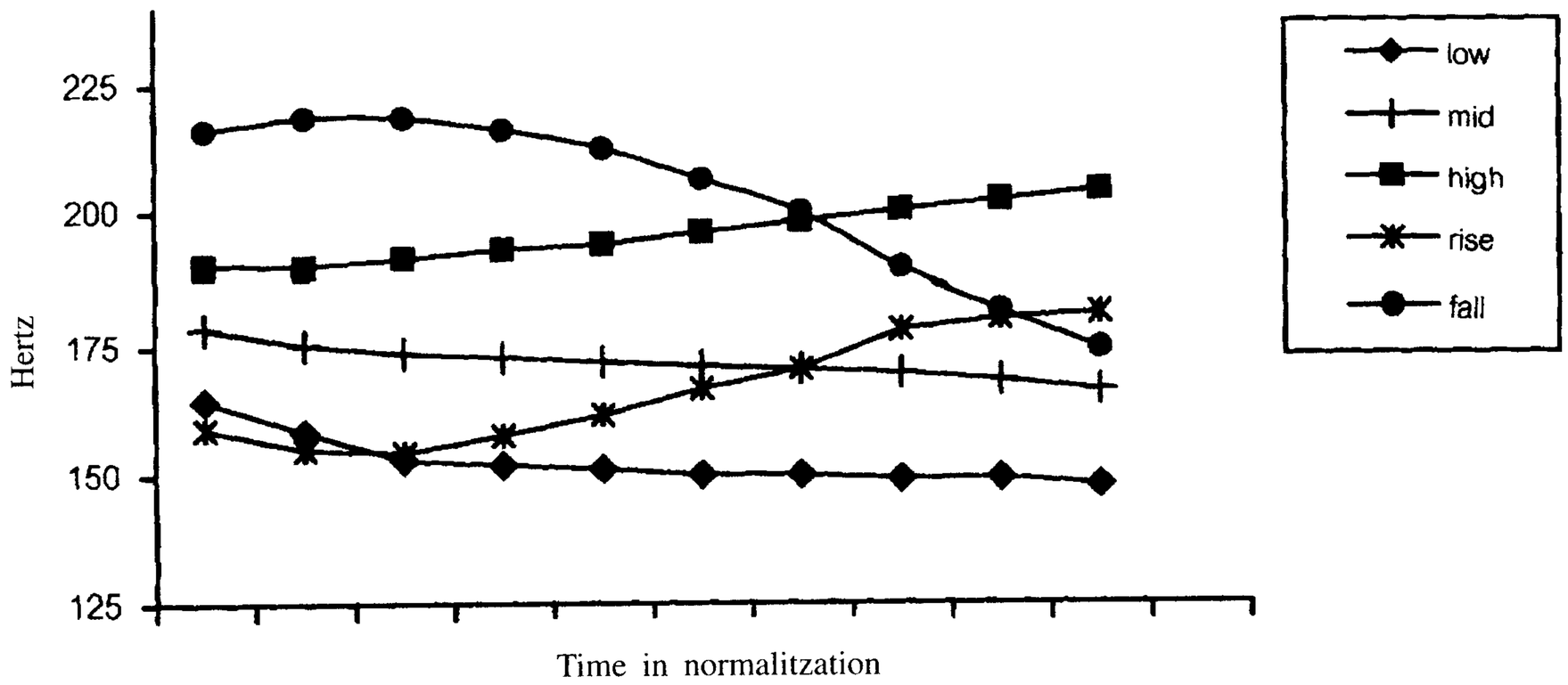

Figure 15: Average fundamental frequencies of all five ST tones on stressed syllables in connected speech produced by three copper-accent speakers

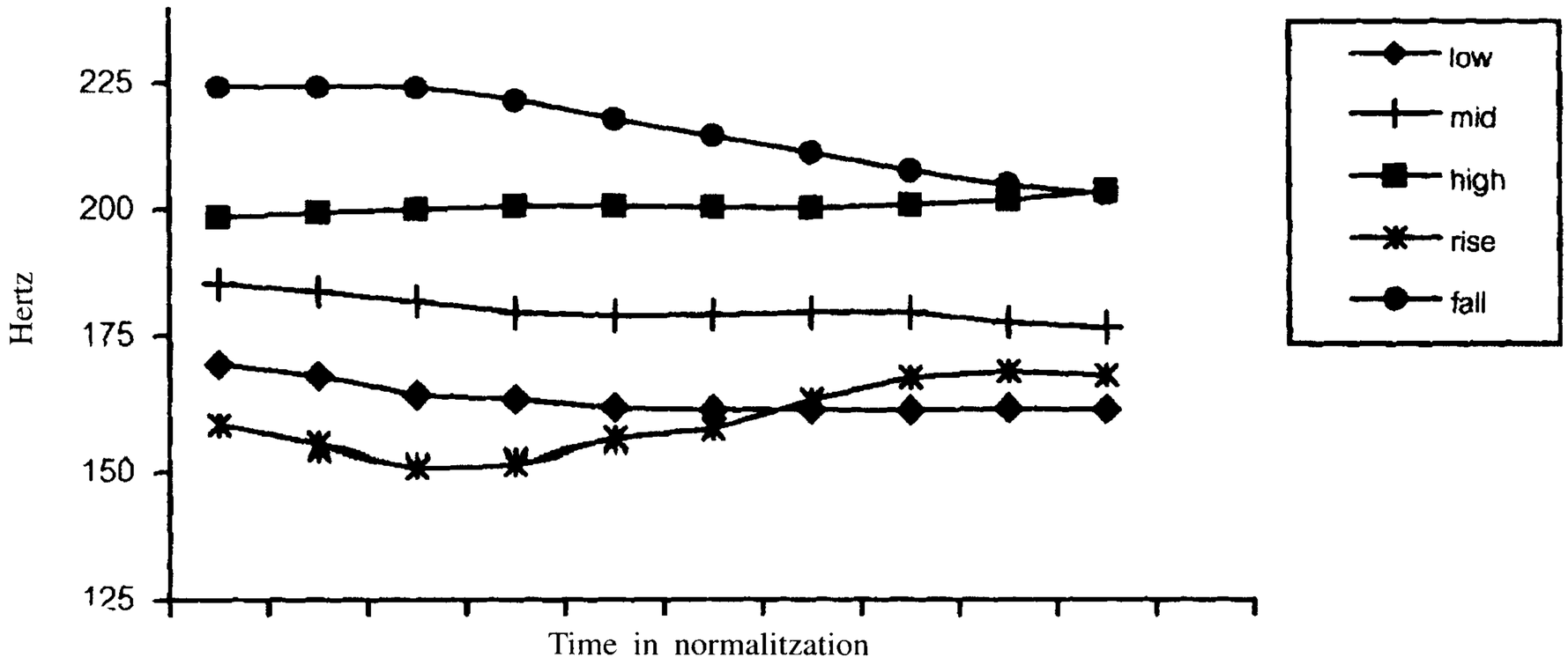

Figure 16: Average fundamental frequencies of all five ST tones on unstressed syllables in connected speech produced by three copper-accent speakers

is in line with Tingsabadh and Deeprasert's observation that these two contour tones tend to lose their fall and rise in every contexts except citation form. Figure 15 and 16 summarize the shapes of all ST tones in the stressed and unstressed positions of connected speech respectively: All tones on stressed syllables in connected speech become more level and show very little contour in the unstressed position, although they maintain their distinctive height in the tone space. The ST tones produced by the three copper-accent speakers are in line with Tingsabadh and Deeprasert's conclusion that the degree of stress is one factor which influences tone realization in pitch height and shape. That is, tones of citation forms preserve their pitch height and shape whereas tones in an unstressed position tend to become more level. Since tones of citation form and connected speech produced by the copper-accent speakers bear no evidence of deviation from the ST tones, it seems that tone is the least significant, if at all, phonetic feature that characterizes the copper-accent ST speech.

4.4 The perception of syllable-timed rhythm; is it an illusion?

In Section 3 I have mentioned that the copper-accent ST speeches that were chosen for the acoustic analysis were correctly identified by the highest number of listeners, of the thirty who participated in the listening test. These listeners were optionally asked to make some comments on any kind of impression they had towards the copper accent. Some of them have noticed "strange, syllble-by-syllable kind of speech utterance". This kind of impression on the copper accent is not new at all. My personal conversations with other Thais seem to suggest a rhythmic difference between ST and the copper-accent ST. Their comments undoubtedly imply that the ST spoken by copper-accent speakers tend to be syllable-timed.

Pike's and Abercrombie's well-known dichotomous terms of stressed-timed and syllable-timed rhythm have been refuted by several studies that involve physical measurement of the actual timing of speech. Dauer's (1983) (data taken from Laver 1994: 530 and Dimitrova 1998: 28) experimental work has shown that languages perceived to be the extremes of stressed-timed and syllable-timed scale like English and French show no significant difference in the duration of interstress intervals. Dauer has therefore proposed other phonetic components to be factors that cause differences in rhythmic perception such as syllable structure, vowel length, role of pitch (tone and intonation) and others. However, I think that the evidence for different perception of rhythm would be less explicit if such perception of rhythmic difference occurs *within* the same language, just like what we see here in terms of the impression on rhythmic difference between ST and the copper-accent ST. This is

because we cannot easily point to any specific phonetic features when syllable structures of the two dialects are more or less the same, consisting of C(C)VC, C(C)VVC, CVV, and CV in spontaneous speech.

Luangthongkum (1977) is the first Thai linguist who has conducted thorough studies on rhythm in Thai[5]. Her work had been done before the 80's when the criticisms on the syllable-/stress-timed dichotomy started. Yet, she has already noticed the pitfalls of such a sharp-cut notion. In her dissertation titled "Rhythm in Standard Thai", she proposes that ST is of both syllable-timed and stressed-timed types of language. The choice of rhythm depends on an individual's speech style. The syllable-timed speech is usually found in reading, (buddhist) monks' preaching and chanting, and reciting some poetic lyrics (Luangthongkum 1977: 164). Otherwise, the stress-timed speech is produced in ordinary spontaneous conversation. Luangthongkum (1977: 160) notes that rhythm consists of three components: speech timing, the psychology of time, and lastly, its phonology and syntax. Speech timing, the physical measurement of the language's actual timing, is necessary when one studies a rhythm of a language. In fact, her acoustic analysis of actual timing of Thai syllables and feet has shown that stressed syllables have a high correlation with their syllable length. That is, stressed syllables tend to be longer in duration than

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[5] Many previous research studies on Thai phonology hardly mention the aspect of rhythm. To my knowledge, Noss' (1972) "Rhythm in Thai" (in Tai Phonetics and Phonology, ed., J.G. Harris and R.B. Noss.) was the only article that touches upon the issue of Thai rhythm prior to Luangthongkum's work. But his data was limited to only one sentence samples.

unstressed syllables in Thai. Her methodology involves physical measurement of syllable length within each foot. She concludes that there are 5 types of the foot structure in Thai, which can be collapsed into the following formula:

$$| \left\{ \begin{matrix} S \\ P \end{matrix} \right\} W0\text{-}4 |$$

(| indicates a foot boundary. S is stressed syllable, W is weak syllable, P is pause, and 0-4 refers to the number of weak syllables in each type of foot structure)

This formula implies that a foot can carry a single stressed vowel, a stressed vowel followed by one to four weak syllables, a single pause, or a pause followed by one to four weak syllables. The | SW3 | and | SW4 | types of foot structure are very rare. Each foot is strictly set to three time units of time values[6]. Therefore, a single S of a foot can be counted as having three units whereas a foot of the | SWWW | type has a value of 1:2/3:2/3:2/3 in ratio, for example. Later work on Thai rhythm, particularly by Thai linguists, has been conducted by the same methodology[7]. The findings of these work are very much

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[6] Luangthongkum emphasizes in both of her dissertation (1977: 175) and her article (2532: 132) that the system of three-unit foot is just a matter of convenience. She states that one can perhaps posit the time unit of different values (e.g. two time units, four time units and so on). But for her the three-time unit of each foot is more convenient for analysizing the foot structure in Thai.

[7] All these work are the master's theses of Chulalongkorn University (in Thai); (1) สุกัลยา สุรินทร์ไพบูลย์. 2528. ระบบพยางค์หนักเบาของคำหลายพยางค์ในภาษาไทย. วิทยานิพนธ์อักษรศาสตรมหาบัณฑิต บัณฑิตวิทยาลัย จุฬาลงกรณ์มหาวิทยาลัย (2) วัฒนะ บุญจับ. 2532. จังหวะและทำนองในเพลงฉ่อยและลำตัด. วิทยานิพนธ์อักษรศาสตรมหาบัณฑิต บัณฑิตวิทยาลัย จุฬาลงกรณ์มหาวิทยาลัย (3) ผณินทรา ธีรานนท์. 2543. หน่วยจังหวะ

in agreement. I personally feel that it would be useful and in fact convenient to use the same methodology as the previous research that I have just mentioned, so that my findings could be compared with them in the same fashion. Five-minute spontaneous speeches of three chosen copper-accent speakers were recorded, then their foot boundaries were decided. In doing so I listened carefully to find stressed syllables in their speech. Then the foot marker | was inserted before a stressed syllable. Each foot is therefore a subjectively equal interstress interval of time. The foot length and syllable length within each foot were examined.

The following are my findings in comparison with Luangthongkum's (1977) and Sawanakunanon's (2545) (see ญาณินท์ สวนะคุณานนท์ 2545 in reference)

4.4.1 Foot structure of the ST speech with the copper accent

Table 1 indicates the total number of each type of foot structure as well as feet as a whole in each informants' speech. Similar to Luangthongkum's findings for ST, there are five possible foot structures, ranging from one-syllable feet to five-syllable feet, although the five-syllable feet of | S/PW4 | rarely occur. I did not average out the occurrences of feet for all three speakers because the percentage occurrences of several types of feet vary across the speakers. They seem to correlate with each speaker's speaking habit

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กับการแปรของวรรณยุกต์ในคำพูดต่อเนื่องภาษาไทย. วิทยานิพนธ์อักษรศาสตรมหาบัณฑิต บัณฑิตวิทยาลัย จุฬาลงกรณ์มหาวิทยาลัย และ (4) ญาณินท์ สวนะคุณานนท์. 2545. การเปรียบเทียบจังหวะภาษาไทยในการพูดของผู้พูดที่ใช้หลอดลม-หลอดอาหารกับการพูดของผู้พูดปกติ. วิทยานิพนธ์อักษรศาสตรมหาบัณฑิต บัณฑิตวิทยาลัย จุฬาลงกรณ์มหาวิทยาลัย

and style. Therefore, making an average of the whole occurrence would be meaningless. It can be seen that the percentages of | S | produced by Aunty Ngim and Aunty Pissamai are quite different; about 50% by Aunty Ngim whereas Aunty Pissamai's | S | only occurs 42.47% of the total. Moreover, Aunty Ngim does not have | SW4 | in her speech. Within the same amount of time (five minutes), her total number of foot occurrence is 733; the greatest number among three of them. These differences all lead to her speech style; Aunty Ngim is the fastest and in fact a verbose speaker. Her speech sounds more like syllable-timed among the three.

The results of foot structure in Table 1 do not seem to support either stress-timed or syllable-timed rhythm, since they show that all three speakers produced interstress- as well as syllable-intervals. But whichever kind of rhythm it might be, the percentages of each foot type correlate with those in ST conducted by Luangthongkum (1977) and Sawanakunanon (2545). One-syllable foot structure shows the greatest number of its occurrence in all research; 69%, 59%, and 63% by the copper-accent speakers in Table 1, 61% in Luangthongkum (1977: 146), and 65% in Sawanakunanon (2545: 55). On the other hand, five-syllable feet of the | SW4 | type are uncommon and were not found in all speakers. As a result, I shall not discuss their occurrences.

4.4.2 Average duration of syllables in all types of feet

The average stressed syllables range from .2 to .3 seconds. In Figure 17, the durations of each foot that carry stressed syllables are compared. When one unstressed syllable is added to form a new foot, it has an average duration of approximately .15 seconds,

Table 1: Percentages of each type of foot structure in five-minute spontaneous speech produced by each informant:

Type of foot structure	Aunty Ngim						Aunty Maria						Aunty Pissamai					
	| SW 0-3 |		| PW 0-4 |		Total		| SW 0-4 |		| PW 0-4 |		Total			| SW 0-4 |		| PW 0-4 |		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%			No.	%	No.	%	No.	%
One-syllable feet	365	49.79	141	19.23	506	**69.02**	319	48.26	71	10.74	390	**59**	240	42.47	115	20.35	355	**62.82**
Two-syllable feet	131	17.87	34	4.63	165	22.5	110	16.64	36	5.44	146	22.08	88	15.57	50	8.84	138	24.41
Three-syllable feet	27	3.68	22	3	49	6.68	53	8.16	35	5.29	88	13.45	38	6.72	17	3	55	9.72
Four-syllable feet	3	.40	9	1.22	12	1.64	14	2.11	14	2.11	28	4.22	6	.70	5	.88	11	1.58
Five-syllable feet	—	—	1	.13	1	.13	6	.90	2	.30	8	1.2	4	.70	2	.35	6	1.05
Total (no. and %)	526	71.74	207	28.21	**733**	99.95	502	76.07	158	23.88	**660**	99.95	376	66.16	189	33.42	**565**	99.58%

"No." refers to the total number of occurrences.

independently of the number of syllables within its foot. The ratio of the three-time units for | S | : | SW | : | SWW | : | SWWW | is thus 3:4:5:6, quite similar to the ratio of feet in ST in Luangthongkum (2532: 124) and Suwanakunanon (2545: 83). I did not include the result of | SWWWW | in Figure 17 as I have already mentioned that it is uncommon, but I observe that the last unstressed syllable of this foot is approximately .1 second in duration, confirming the fact that at least .1 second is added in a larger foot.

Again, the results of average duration of syllables in Figure 17 do not support that the copper-accent ST belongs to stressed-timed or syllable-timed groups. It can be seen that the duration of interstresss intervals is not proportionate to the number of syllables; that is, the duration of two-syllable feet is not double one-syllable feet, and nor is the duration of three-syllable feet three times longer than one-syllable feet. Looking at this fact alone, we might assume that it supports stressed-timed rhythm. But actually when a weak syllable is added the first stressed syllable of a foot is very little (if not at all) shortened. In Table 2 we can see that the duration of S in the five-syllable feet is .2 seconds, similar to the duration of the other types of feet (except | S |). With this reason, the copper-accent ST cannot be of the stressed-timed type of rhythm either.

Figure 18 is the average duration of weak syllables that are preceded by a pause. The duration of pause in each foot type is varied according to different speakers. It seems to me that pauses have some correlation with the speaker's speaking rate. For example, Aunty Pissamai is a slow-speaking person. She uses pause as a tool to think of what she would say next. I found that in general pauses

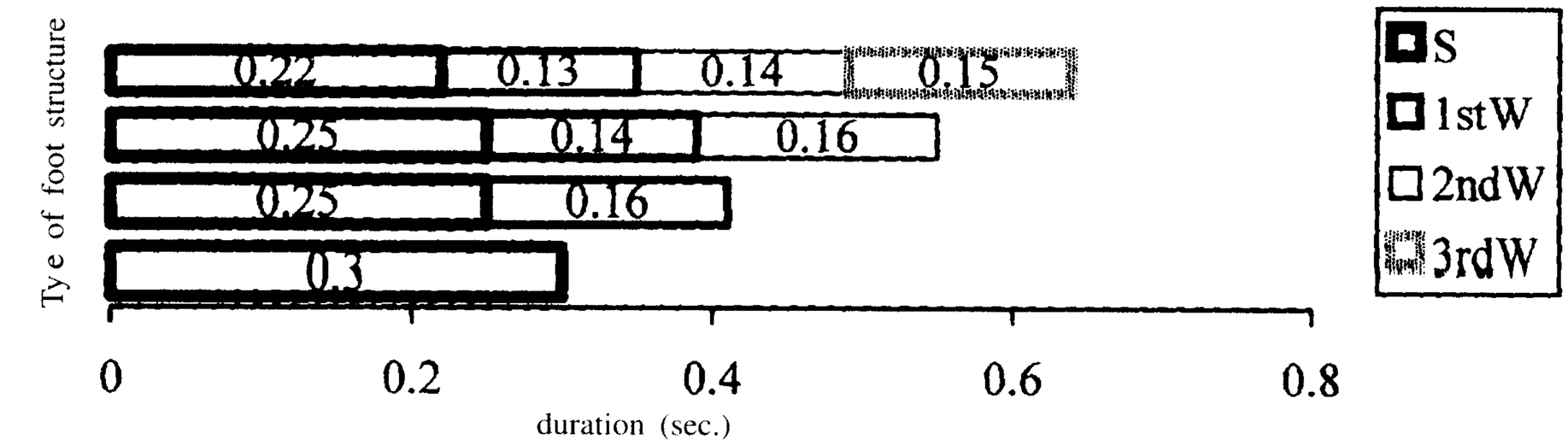

Figure 17: Average duration of syllables within each type of foot produced by three copper-accent speakers (Sec.)

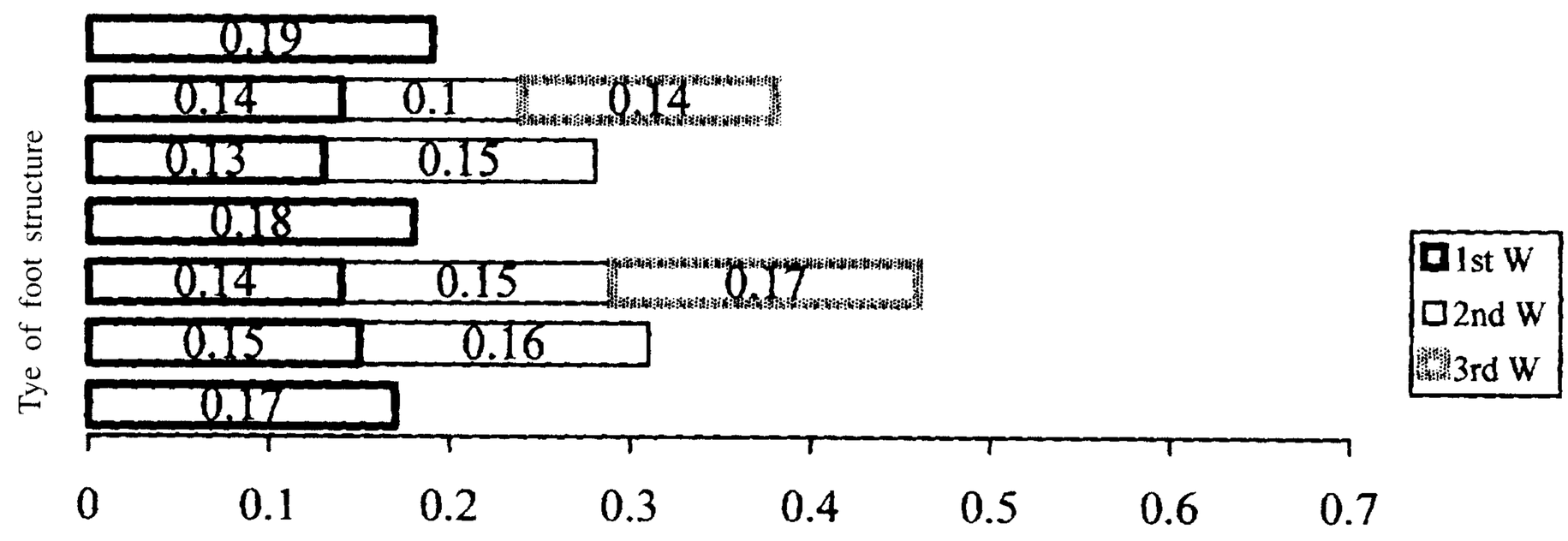

Figure 18: Average duration of weak syllables within the/PW0-3/ type of foot produced by three copper-accent speakers (Sec.)

Line 1 (from top) is preceded by | ppp |. Line 2-4 | PP |. And finally line 5-7 | P |. P refers to 'pause'. The duration of | PP | doubles | P |. And the duration of | PPP | is three times longer than | P |.

affect the duration of the syllables preceding them; they tend to be longer before a pause. On the other hand, the weak syllables following a pause have a very similar duration in seconds as those which follow a stressed syllable. Therefore, a pause of each foot type does not have any effect on its following weak syllables, as shown in Figure 18. A weak syllable of approximately 1.5 seconds is added to a larger

foot, independently of the duration of its preceding pause. And since the duration of pauses has a wide range from .3 to 1.64 seconds, the whole picture of average duration for weak syllables that follow a pause may look too complicated if average duration of pauses is added to Figure 18. The pause duration is therefore ignored and the duration of their following weak syllables is shown only. In Figure 18, the duration of | PP | doubles that of | P |, and that of | PPP | is approximately three times longer than | P | respectively.

4.4.3 Duration of foot structures and their duration ratio in comparison with the two previous studies of Luangthongkum (1977) and Sawanakunanon (2545)

Table 2 compares the duration of each foot in detail between my findings, the experimental work done by Luangthongkum (1977), and Sawanakunanon (2545). The foot structure of | SWWWW | is found in Luangthongkum's work but its data is not available. Suwanakunanon does not find such a foot structure in her findings.

It can be seen from Table 2 that the greater the number of syllables in my findings, the longer the foot is, compared with the other findings. But such differences are too subtle to conclude that my findings are significantly different from theirs. Table 3 confirms that the ratio of syllable length within each foot in my findings is not significantly different from the previous work.

Table 2: Average duration of syllable and each type of foot structure (in seconds) in comparison with two other findings

Type of foot Structure	Stressed syllable (S) (Sec.)			1st weak syllable (W) (Sec.)			2nd weak syllable (W) (Sec.)			3rd weak syllable (W) (Sec.)			4th weak syllable (W) (Sec.)			Average duration (in Seconds)		
	L	S	K	L	S	K	L	S	K	L	S	K	L	S	K	L	S	K
| s |	.30	.24	.30	N/A												.30	.24	.30
| sw |	.25	.21	.25	.15	.12	.16	N/A									.40	.34	.41
| sww |	.23	.21	.25	.13	.12	.14	.13	.12	.16	N/A						.49	.45	.55
| swww |	.22	.22	.22	.13	.12	.13	.13	.12	.14	.13	.11	.15	N/A			.59	.56	.63
| swwww |	N/A		.23	N/A		.14	N/A		.14	N/A		.15	N/A		.17	N/A		.83

L refers to the findings of Luangthongkum (1977), S is Sawanakunanon's (2545), and K is mine (Kamalanavin). N/A stands for Non-applicable.

Table 3: Ratio of syllable length (in three-time units) within each type of foot structure, in comparison with Luangthongkum's (1977) and Sawanakunanon's (2545)

Type of foot structure	Luangthongkum (3-time units)	Suwanakunanon (3-time units)	Kamalanavin (3-time units)
| s |	3	3	3
| sw |	2:1	1.87:1.13	1.8:1.18
| sww |	1.5:0.75:0.75	1.42:0.78:0.80	1.33:0.78:0.86
| swww |	1:0.67:0.67:0.66	1.17:0.62:0.62:0.59	1.02:0.60:0.65:0.68
| swwww |	N/A	N/A	0.82:0.51:0.51:0.52:0.60

N/A stands for non-applicable.

In general, the results of the physical measurement of feet shown above indicate that there is no significant difference in syllable and feet duration between the copper-accent ST and ST spoken by the native ST speakers, which forces me to conclude that Thai people's perception of syllable-timed rhythm in the copper-accent ST is perhaps an illusion. Certainly we cannot simply ignore the fact that we actually hear "syllable-by-syllable kind of speech" produced by the copper-accent speakers; there must be some explanation of how this type of rhythm can be perceived by our Thai ears.

4.5 Other phonetic factors

The acoustic analysis of tone and rhythm in the copper-accent ST tells us nothing as to why we perceive the rhythm of the copper-accent ST in such the way we do; why we feel that the copper-accent ST speakers speak with a clear syllable-by-syllable fashion, leading us to assume that their rhymic patterns are different from the native ST speakers. The analyses of tone and rhythm *as a whole* indicate that ST and the copper-accent speeches are not significantly different. However, if we look at some particular words and compounds in the copper-accent ST speech we find that the way they say them is quite different from the native ST speakers. First of all, I observe that reduplication words were in all cases pronounced with equal duration, unlike those of ST whose first syllable is usually unstressed. The followings are example of sentences carrying reduplication words:

| tɔ:n | kàp kɔ̂ | nâŋ lɔt | fai | k^{h}an | **lék** | **lék** | kàp | feet
.26 .21 .20 .26 .17 .36 .24 .18 .17 .14 seconds
when go back sit train classifier small small back
"...on the way back we got on a small train..."
(spontaneous speech produced by Aunty Ngim)

| ba:ŋ | t^{h}i t^{h}i | săn | câu | **tàŋ** | **tàŋ** | lɛ́u tɛ̀ | feet
.17 .21 .16 .26 .29 .20 .21 .13 .15 seconds
sometimes at shrine many many depend on
"...Sometimes, at the shrine, depending on..."
(spontaneous speech produced by Aunty Maria)

| du: | lai | ka:n | nón | lai | ka:n | ní: | pai | ˆ | **lûai** | **lûai**| feet
.33 .23 .23 .19 .17 .23 .16 .19 .1 .18 .22 seconds
watch program that program this (pause) continuously
"...(I) kept watching these and those TV programs..."
(spontaneous speech produced by Aunty Pisamai)

Some particular words were pronounced with different vowels from ST; for example, ST /na: lí?ka:/ "watch" was pronounced [nɔ̲:lí?̲ka:] by Aunty Ngim, /kamala:/ "name of a beach" was [kɔ̲mala:] by Aunty Maria. The phrase /tɕ^{h}âj máj/ meaning "is that right?" was [tɕ^{h}âj mɛ̲́] by Aunty Maria. These bits and pieces of vowel alternations were not many, but they certainly add more identity of "copper-accent" to the Southern speakers.

In section 4.2 I have mentioned that in some cases long vowels in ST were pronounced short in the copper-accent ST, causing some change in the syllable structure. For example, /k^{h}áw/ "he, she, they" in ST was pronounced [k^{h}á:u], /k^{h}ɛ̌ŋ/ "hard,strong" corresponds to [k^{h}ɛ̌:ŋ]. The long vowels lengthen the syllable structures, cause them to be percieved as longer words.

5. Conclusion

The ST speeches spoken by Southerners; the so-called copper-accent ST, are usually easy for any Thai speakers to detect. I must admit that the Phuket dialect may not be a good representative of the copper-accent, as it has its own characteristics, perhaps due to the fact that the speakers are bilinguals between Thai and Fokanese. However, the Phuket dialect is absolutely one of the copper-accent dialects. Some people, including myself, feel that this copper-accent ST has something to do with rhythmic difference from ST. The acoustic analysis of rhythm, however, confirms that the way we percieve is certainly not the same as the way this dialect actually behaves. In this paper, I found that tones and rhythmic patterns are not the main factors that characterize the copper-accent ST speech. The consonant is also unlikely to be the factor, because the non-existence of consonant clusters is also found in many ST native speakers. The evidence that is left seem to point to the vowel qualities of the copper-accent ST speakers. I would like to suggest that in order to get the exact answer of what constitutes the nature of the copper-accent ST, thorough investigation needs to be done on its vowel system.

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Appendix 1: Listening Test

Listener's information

1. Age_____ years old gender____ highest education_____
2. You were born in_____ and raised in _____
3. Have you ever heard the Standard Thai spoken by Southerners (i.e., the copper-accent)?

   Yes _____

   No _____

   Uncertain _____
4. If yes, to what degree of certainty you are able to identify the copper accent?

   Very certain _____

   Quite certain _____

   Not certain _____

Listen to the speech utterances carefully. Choose one of the following answer choices. You may make any comments on the section ***Others.***

Speaker 1: speaks the Standard Thai...

❑ Clearly

❑ With copper accent

❑ Others (please explain)_____

Speaker 2: speaks the Standard Thai...

❑ Clearly

❑ With copper accent

❑ Others (please explain)_____

Speaker 3: speaks the Standard Thai...

❑ Clearly

❑ With copper accent

❑ Others (please explain)_____

Speaker 4: speaks the Standard Thai...

❑ Clearly

❑ With copper accent

❑ Others (please explain)_____

Speaker 5: speaks the Standard Thai...

❑ Clearly

❑ With copper accent

❑ Others (please explain)_____

Speaker 6: speaks the Standard Thai...

❑ Clearly

❑ With copper accent

❑ Others (please explain)_____

Speaker 7: speaks the Standard Thai...

❑ Clearly

❑ With copper accent

❑ Others (please explain)_____

(Listeners were asked to listen and identify the speeches of <u>ten</u> speakers.)