The English Rhythmical Patterns in the Readings of Thai Learners with High and Low English Language Experience, and the Degree of Comprehensibility Judged by L1 English and L1 Thai English Teachers

Tipparat Eiamworawuttikul[1]

Sudaporn Luksaneeyanawin[2]

Abstract

This research is (1) To study the English rhythmical patterns produced by Thai learners (2) To explore the problems of Thai learners with high and low English language experiences in their English rhythmical patterns (3) To examine L1 English and L1 Thai English teachers' degree of comprehensibility towards the readings of Thai learners and (4) To find the correlation between the problems in English rhythmical patterns and the degree of comprehensibility in two groups of judges, L1 English and L1 Thai English teachers.

This research consists of two main studies, i.e., production study and perception study. For the production study, the sample groups were selected by stratified random sampling. They were 30 undergraduate English major students in the School of Liberal Arts, Mae Fah Luang University. They were selected by the English Language Experience scores. There were 2 groups, those with high English language experience or the EFL-High group and those with low English language experience or the EFL-Low group. The data were collected from English passage reading. The rhythmical patterns of each student were analyzed in terms of tonality or the division of their reading into tone groups or information by pauses and the division of the tone group into rhythmic units or feet by stresses. These productions were then compared to the productions of three native English speakers [NSs], who served as a controlled

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[1] Master of Arts student in English as an International Language Program, Graduate School, Chulalongkorn University

[2] Senior Expert, Graduate Program in English as an International Language, Graduate School, Chulalongkorn University

group. In terms of perception study, 6 L1 English teachers of English and 6 L1 Thai teachers of English were asked to rate the degree of comprehensibility towards the readings of the 30 Thai learners. For descriptive statistical analysis, mean, percentage, and standard deviation [SD] were used. For the study on the correlation of the production scores and the comprehensibility scores, One-way ANOVA [Post-Hoc Test], t-test and Pearson's Correlation were employed.

The results were found as follows: (1) English rhythmical patterns in the production of the EFL-High were more similar to those of NS than the EFL-Low. (2) Problems regarding English rhythmical patterns in the readings of Thai learners were as follows: misplacement of tone group boundaries (pause within a phrase and pause within a word) were found, and misplacement of accents (incorrect stress patterns in polysyllabic words and stress on function words), were also found. (3) Both L1 English and L1 Thai teachers of English rated higher degrees of comprehensibility towards the readings of the EFL-High group than the EFL-Low group. (4) The relationship between the problems in rhythmical patterns in the production and the degree of comprehensibility by the two groups of judges showed a high negative correlation value [r = - 0.54] which leads to the conclusion that the more problems in the students' productions, the degrees of comprehensibility in the perception of the judges are less.

For pedagogical implication, this study will be advantageous in designing pronunciation courses and teaching materials for Thai students to improve their English pronunciation.

Keywords: English rhythmical patterns, English language experience, tone groups, feet, comprehensibility

Introduction

In the central of communication, suprasegmentals play an important role to convey meaning in spoken communication, as Kang, Rubin and Pickering (2010: 555) claimed that *"Prosody in comprehensibility research usually includes rhythm, speech rate, pausing, stress, and pitch patterns or intonation".* Usually, non-native speakers of English or second language learners would transfer some characteristics of their first language to the pronunciation of the new language, as well as create the language system which is distinct from their own native

language and the target language, this system is called *"interlanguage"* (Selinker, 1972). That is to say, the learners have tried to reach the target language but still cannot acquire it because of the five main factors in the processes of second language acquisition: L1 transfer, transfer of training, strategies of second language learning, strategies of second language communication, and overgeneralization of the target language rules.

To give a clear picture, it can be seen in the scenario of an international academic conference. If non-native speakers of English have their heavy accent presenting their papers at the conference, listeners may find the presentation really difficult to comprehend. Undoubtedly, this really shows how important pronunciation training is.

For Thai learners of English, one of the pronunciation problems is from the differences between the accentual systems or stress patterns of Thai and English (Luksaneeyanawin, 1983, 1998; Vairojanavong, 1984; Sankhavadhana, 1988; Limsangkass, 2009; Pongprairat, 2011). These differences cause the problems of English rhythmical patterns or tonality of English pronunciation[3] in Thai people. Limsangkass (2009: 4) provided an example of this problem as follows:

> *"In an unmarked situation, English speakers would divide the tone group as follows:*
>
> *//ˬShe's a /primary /school /<u>tea</u>cher.//, whereas Thai speakers would say*
>
> *//ˬShe's a prima/ry /school tea/<u>cher</u>.//"*.

From the example, it shows that Thai accentual systems or stress patterns have great impact on how Thai learners divide the rhythmic units within a tone group by changing the position of the rhythmic unit boundary (foot boundary), marked by '/' differently from native

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[3] **Rhythmical patterns** is used by Luksaneeyanawin (1983) to refer to "tonality" defined by Halliday (1970). It is the division of speech into <u>tone groups</u> (Halliday, 1967, 1970) or <u>pause-defined units</u> (Luksaneeyanawin, 1983, 1998) which refer to intonation units, utterances, or information chunks. The division is governed by the syntactic system. In addition, rhythmical pattern is also the division of each tone group into smaller rhythmical units or feet governed by the word accentual system. **Rhythmical unit or foot** is the time interval from a stressed syllable to the next stressed syllable but not including the next. Speech is unmarkedly divided into equal intervals of time (Luksaneeyanawin, 1983, 1998, 2005).

English speakers. Due to the change in assigning foot boundaries, the listeners or native speakers would have difficulty understanding the speech, and get confused (Limsangkass, 2009).

The example mentioned above shows that apart from the production of speech by speakers, the listeners or native speakers' perception is also important. In communication, there is an interaction between at least two people, one speaker and one listener, in the communication context. To communicate successfully, it takes both the speaker's production as well as the listeners' perception into account.

The explorations of the production of speech are plentiful but the perception studies in terms of the comprehensibility [4] of the listeners after listening to the production are hardly found. This study aims to investigate the production as well as the perception in terms of comprehensibility. It also aims to investigate whether the production of rhythmical patterns found in the readings of EFL learners correlate with the degree of comprehensibility.

Derwing & Munro (2009) and Pongprairat (2011) claimed that in terms of comprehensibility, suprasegmentals have a great impact on listener judgments because they used to convey both the cognitive and emotive meaning in communication. Therefore, this research aims to study Thai learners' productions of English rhythmical patterns as related to the perceptions in terms of comprehensibility in the two groups of judges, i.e., L1 English and L1 Thai teachers of English.

Research Procedures

Production Study

The technique used in identifying the sample groups in this study was a 'stratified random sampling'. Thirty participants, fifteen first-year English majors with the lowest English Language Experience scores (EFL-Low) and fifteen fourth-year English majors with the highest

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[4] **Comprehensibility** refers to the listener's perception of the degree of difficulty to understand the meaning of the speech (Derwing & Munro, 2009; Pongprairat, 2011).

English Language Experience scores (EFL-High), were selected from 222 English majors in the School of Liberal Arts of Mae Fah Luang University (97 seniors and 125 freshmen). The English Language Experience[5] scores acquired from the questionnaire are used in the sampling. The English language experience scores of the two sample groups are shown in Table 1.

Table 1: English Language Experience scores of the EFL-High and the EFL-Low groups

(n = 30)

Statistics	Scores (200)	
	EFL-High (n = 15)	EFL-Low (n = 15)
Min	150	67
Max	169	123
Mean	154.2	108.93
SD	4.63	14.69

As shown in Table 1, the English language experience scores of the EFL-High learners' scores ranged from 150 to 169. The average score is 154.2. On the other hand, the EFL-Low learners' scores ranged from 67 to 123. The mean score is 108.93. The broader variation of the EFL-Low group (SD = 14.69) shows more variation of the experience among the low group as compared to the EFL-High group. This indicates that the EFL-Low participants are non-homogeneous because of their different language experiences. In contrast, the EFL-High participants are more homogeneous with less variation, as seen from the remarkable lower value of standard deviation (SD = 4.63).

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[5] **English Language Experience Questionnaire** was adapted from CRSLP Questionnaire developed for the use in many research works under the supervision of Luksaneeyanawin in the studies of Sudasna Na Ayudhya (2002), Modehiran (2005), Limsangkass (2009), Pongprairat (2011), Wong-aram (2011), Tarnisarn (2012), and Thaworn (2012). The purposes of the questionnaire were used to collect information on the learners' English Language Experience and to select the sample groups according to their English language experience scores.

Moreover, for rhythmical pattern comparison of the learners and the native speakers, three native speakers of English (NSs) who are English teachers at the School of Liberal Arts of Mae Fah Luang University served as the controlled group.

The students were asked to read a passage aloud. The passage was selected from the university course workbook provided for the How to Live and Learn on Campus Project of Mae Fah Luang University. Then, their productions were recorded and analyzed by both auditory and acoustic methods, using PRAAT software program, to confirm the accuracy of the auditory analyses. Periods of acoustic silence represent the physical realization of pauses and prominence of acoustic correlates in terms of vowel duration, amplitude or intensity, and pitch patterns represent the physical aspect of stress.

Perception Study

For the perception study, the judges were six L1 English and six L1 Thai teachers of English from the School of Liberal Arts of Mae Fah Luang University. They were provided with 5-points comprehensibility rating scales (1 = most difficult to understand; 5 = easiest to understand) to judge and rate 30 speech samples of the EFL-High and EFL-Low groups. Data were analyzed by both descriptive and inferential statistics.

Research Findings

Production Study

This section will quantitatively and qualitatively report the research findings regarding both the rhythmical patterns in terms of tone group boundaries and foot boundaries performed by the three sample groups: the NS, EFL-High and the EFL-Low, respectively.

Tone group boundaries

Table 2: Comparison of number of tone groups in the NS, EFL-High and EFL-Low

No. of tone groups	Groups		
	NS (n = 3)	EFL-High (n = 15)	EFL-Low (n = 15)
Min	13	15	22

No. of tone groups	Groups		
	NS (n = 3)	EFL-High (n = 15)	EFL-Low (n = 15)
Max	16	23	55
Mean	14.67	19.4	31.27
SD.	1.53	3.02	8.57

From Table 2, the NS group has a mean of 14.67 tone groups in their readings of the 108-word English passage. For the EFL-High group, the passage was divided into an average of 19.4 tone groups. The EFL-High's production is closer to that of the NS group which has an average of 14.67 tone groups compared to the EFL-Low group that has an average of 31.27 tone groups. The information chunking of the EFL-Low group is double to the production of NS group (31.27 versus 14.67). Moreover, it can be seen that there are more variations of the patterns of tone group division among the EFL-L participants (SD = 8.57) than the EFL-H (SD = 3.02) and the NS (SD = 1.53). To compare the productions across the 3 groups, one-way ANOVA and Post-Hoc Scheffe's method were employed. Table 3 below shows the statistical value acquired from the comparison of the number of tone groups across the three sample groups.

Table 3: Comparison of the mean values of number of tone groups across groups

Group	Mean Diff	Std.	Sig.
NS vs. EFL-High	4.73	3.935	.493
NS vs. EFL-Low	16.60*	3.935	.001*
EFL-High vs. EFL-Low	11.87*	2.272	.000*

*p < .05 (significant difference)

According to Table 3, the production of the NS group and the EFL-High group did not differ significantly (p = .493). On the contrary, significant differences are found in the number of tone groups between the NS group and the EFL-Low group (p = .001*), as well as between the two groups of Thai learners (p = .000*).

Regarding the number of words per tone group, the total number of words in the English passage reading (108 words) is divided by the number of tone groups performed by each

group of informants. The number of words per tone group in the production of the three sample groups is illustrated Table 4.

Table 4: Comparison of number of words per tone group in the NS, EFL-High and EFL-Low

No. of words per tone group	Groups		
	NS (n = 3)	EFL-High (n = 15)	EFL-Low (n = 15)
Min	6.75	4.7	1.96
Max	8.31	7.2	4.91
Mean	7.42	5.71	3.66
SD.	0.80	0.96	0.83

The comparison of the number of words per tone group among the three sample groups illustrates that the NS group has 7.42 words per tone group on average, whereas the EFL-High and the EFL-Low has 5.71 and 3.66 words per tone group on average. The average number of words per tone group of the EFL-High ($\bar{x}$ = 5.71) is shorter but closer to that of the NS group ($\bar{x}$ = 7.42) compared to that of the EFL-Low group that has a very short information chunks ($\bar{x}$ = 3.66). This means that the EFL-High group can read with longer information chunks, whereas the EFL-Low group produced very short ones.

To compare the productions across groups, one-way ANOVA and Post-Hoc Scheffe's were used to test whether the differences are statistically significant or not. The following table illustrates the statistical values of the differences.

Table 5: Comparison of the mean values of number of words per tone groups across groups

Group	Mean Diff	Std.	Sig.
NS vs. EFL-High	1.71*	.564	.018*
NS vs. EFL-Low	3.76*	.564	.000*
EFL-High vs. EFL-Low	2.05*	.326	.000*

*p < .05 (significant difference)

Table 5 shows significant difference in the number of words per tone groups among all the sample groups, i.e., between the NS group and the EFL-High (p = .018*), the NS group and the EFL-Low (p = .000*), and the EFL-High and the EFL-Low (p = .000*)

After the quantitative analysis of the rhythmical patterns on the three sample groups, the next section will qualitatively present the production of each group: the NS, the EFL-High and the EFL-Low, respectively. The number in the parentheses shows the number of speakers that have similar patterns of pause in the readings.

NS-Group (n = 3)

// David Beckham became a famous soccer player in the late 1990s, (3)// and in 2003 (1) I was the most recognizable athlete in the world. (3)// He was a popular player first in England for Manchester United (3) // and then in Spain for Real Madrid. (3)// They are both successful and very rich soccer teams. (3)// Beckham is a valuable player because he can take dangerous free kicks (2)// and pass the ball long distances. (3)// Beckham was a fantastic leader. (3)// He led his country, (3)// England, (3)// in the 2002 World Cup (3) I where they only lost to Brazil. (3)// His fans also respect him (2) // because he is a very hard worker on the field (3) I and on the training ground. (3)//

From the production of the NS group, it can be seen that the tone group boundaries performed by NSs are as predicted theoretically. 16 tone group boundaries are found. They are 13 clause boundaries and 3 phrase boundaries. The boundaries occur as predicted in the potential tone group boundaries. Uniformity among the 3 NSs existed at 13 tone group boundaries within the 16 boundaries, mostly at clause boundaries. However, it is interesting to note that apart from the uniformity that is mostly governed by the syntactic aspect , there are also variations of tone groups (SD = 1.53) in the production of NSs that is oriented towards the semantic and pragmatic aspects. These variations were found at phrase boundaries as follows:

// and in 2003 (1)// //was the most recognizable athlete in the world. (3)//

One of the NSs intentionally assigned additional tone group after *"and in 2003"* to focus the year that Beckham became most recognized athlete in the world.

Abercrombie (1968) and Luksaneeyanawin (1988) claimed that: when the speakers are approaching the end of the readings or speaking, the speakers would pause more to signal an end to an utterance. It can be seen from the following example that all NSs paused before the last information unit *"on the training ground"* to signal that it comes to an end of an utterance in their production (a terminal function).

// His fans also respect him (2) // because he is a very hard worker <u>on the field (3)</u>I and on the training ground. (3)//

EFL-High Group (n = 15)

// David Beckham (2) I became a (1) famous soccer player (2) I in the (1) late 1990s, (15)// and in 2003 (8) I was the most (1) recognizable (2) athlete (4) I in the world. (15)// He was a popular player (2)// first (2) in England (2) I for Manchester United (14) // and then (3) I in Spain (3) I for Real Madrid. (15)// They are both (1) successful (1)// and very rich (1) soccer teams. (15)// Beckham (2) I is a valuable (1) player (8)// because (4) he can take (2) dangerous (2) free kicks (14)// and (1) pass the ball (1) long distances. (15)// Beckham was a fantastic leader. (15)// He led his country, (13)// England, (15)// in (1) the (1) 2002 (2) World Cup (15) I where (2) they only (1) lost (2) to (1) Brazil. (15)// His fans (1) I also respect (1) him (8)// because (1) he is a very hard worker (10)// on the field (9) I and (1) on the training ground. (15)//

In the EFL-High group, it can be seen that 100% of participants do not have any problems in chunking the information at the predicted clause boundaries. The uniformity among the EFL-H group can be found at 10 potential tone group boundaries: 9 are found at clause boundaries, and one at phrase boundary. Most students from EFL-HIGH group do not have problems in dividing the passage into small syntactic units, especially at the end of the sentences, clauses and phrases. The tone group boundaries are mostly coincide with the boundaries between the syntactical units. Their rhythmical patterns are quite similar to the NS group. However, it could be observed that minor variations of tone group boundaries (SD = 3.02) can be found in the EFL-High group. The variations found are mainly the misplacement of tone group boundaries within some phrases. The examples are as follows:

Within NP

    1.1 Between NP and its Determiner: a (1)I* famous soccer player

    1.2 Between Adj and NP: dangerous (2)I* free kicks

Within VP

    Between Verb and Modifier: lost (2)I* to Brazil

Within PP

    Between Preposition and NP: in (1)I* the 2002 World Cup

In the readings of the EFL-Low learners, they chunk the passage into a large number of tone groups ($\bar{x}$ = 31.27) compared to the NS and EFL-High. Many of the boundaries assigned do not coincide to potential syntactical units, resulting as fragmented speech. The performance of the EFL-Low group is shown below

EFL-Low Group (n = 15)

//David Beckham (6) I became (2) a famous soccer (2) play (1) yer (8) I in the (4) late (7) 1990s, (15)// and in (6) 2003 (11) I was (1) the most (5) recognizable (7) ath (1) lete (7) I in the world. (15)// He was a (2) pop (1) pular (2) player (1)// first (7) in England (9) I for (1) Manchester (1) United (14) // and (1) then (8) I in Spain (5) I for (1) Real Madrid. (15)// They are both (5) successful (4)// and very (1) rich (11) soccer teams. (15)// Beckham (2) I is a (6) valuable (3) player (9)// because (11) he can take (2) dangerous (4) free (2) kicks (14)// and (1) pass (6) the ball (5) long (6) distances. (15)// Beckham (1) I was (1) a (2) fantastic (1) leader. (15)// He (1) led (3) his country, (10)// Eng (1) land, (15)// in (1) the (8) 2002 (6) World Cup (15) I where (3) they (3) on (1) ly (4) lost (10) to Brazil. (15)// His fans (3) I also respect him (8)// because (9) he is a (1) very (1) hard (1) worker (9)// on the (2) field (13) I and (1) on the (1) training ground. (15)//

Within the EFL-Low group, 100% of participants do not have problems in chunking tone groups at predicted sentence boundaries, as found in the NS and the EFL-High production. The uniformity existed at 10 tone group boundaries, 9 at clause boundaries and 1 at phrase boundary. This is similar to the performance of the High group. However, it is found that there are more variations of tone group boundaries in the EFL-Low group (SD = 8.57) than that of the EFL-High group (SD = 3.02). The variations performed by the EFL-Low group are misplacement of tone group

boundaries found within phrase boundaries and the worst is within words. The examples are as follows:

Within VP

        1.1 Between Copular Verb and NP: was (1)I* a fantastic leader

        1.2 Between Verb and Modifier: lost (10)I* to Brazil

Within NP

        2.1 Between AdjP and NP: a popular (2)I* player

        2.2 Between NP and its Determiner: the (4)I* late 1990s

Within PP

        Between Preposition and Noun: for (1)I* Manchester United

In conclusion, pauses within phrases are the problems found most in the production of both EFL-High and the EFL-Low. Other interesting problems are pauses within words that are found only in the production of the EFL-Low group. All the problems found in the production of the EFL-High and EFL-Low are illustrated in the following table.

Table 6: **Problems of Tone group boundaries found in the EFL-High and EFL-Low's productions**

Misplacement of tone group boundaries	EFL-High	EFL-Low
1. Pause within phrases	33	159
2. Pause within words	0	5
Total errors found (*n* = 197)	33	164
Percentage of problems	16.75%	83.25%

Table 6 illustrates that the EFL-Low group got higher percentage of problems in chunking tone groups (83.25%) compared to the EFL-High (16.75%). The table shows that pauses within phrases are found in the productions of both EFL-High (33 errors) and EFL-Low group (159 errors). These pause insertion can be considered as errors because the pauses are put between the syntactic units that should be tightly tied, for example, between determiner and NP in an NP, or between modifying AdjP and Noun in an NP. The examples of this type of problem are shown as follows:

Between Determiner and NP

      (1) David Beckham became a famous soccer player in the I* late 1990s.

Between AdjP and Noun

      (2) …in 2003 was the most recognizable I* athlete in the world.

      (3) Beckham is a valuable I* player.

Within Words

This type of errors is found only in the reading of the EFL-L group. Within a word a silence or a pause is inserted, for example, athI* lete, playI* yer, popI* pular, EngI* land, and onI* ly. It as if the students are not sure how to pronounce the word either because the word is difficult, for example "athlete", or because they hesitate where to put the stress in the words that are so common like "player, popular, England, and only".

The next part will present quantitative and qualitative analysis of foot boundaries performed by the three sample groups: the NS, EFL-High and EFL-Low.

Foot boundaries

Table 7: Comparison of number of feet in the NS, EFL-High and EFL-Low

No. of foot boundaries	Groups		
	NS (n = 3)	EFL-High (n = 15)	EFL-Low (n = 15)
Min	63	64	68
Max	63	78	84
Mean	63	68.6	73.87
SD.	0	4.12	4.10

Regarding the number of feet in the readings of all sample groups, the NS group divided their read speech into an average of 63 feet uniformly. For the EFL-High group, they performed 68.6 feet on average which is very close to the production of the NS group ($\bar{x}$ = 63) compared to that of the EFL-Low group that have an average of 73.87 feet.

It is interesting to note the high value of EFL-High's standard deviation (SD = 4.12) is obviously very close to that of the EFL-Low (SD = 4.10). This may indicate that the productions

of foot boundaries, governed by assignments of the word accent in both groups of students seem to vary at the same range.

Comparing the productions of the three groups, one-way ANOVA and Post-Hoc Scheffe's method were used to test whether the differences are statistically significant or not. Table 8 shows the statistical values of the differences in the number of feet across groups.

Table 8: Comparison of the mean values of number of feet across groups

Group	Mean Diff	Std.	Sig.
NS vs. EFL-High	5.60	2.512	.100
NS vs. EFL-Low	10.87*	2.512	.001*
EFL-High vs. EFL-Low	5.27*	1.450	.004*

*p < .05 (significant difference)

According to Table 8, it shows that the production of the NS group and the EFL-High group did not differ significantly since the p value is more than .05 (p = .100). On the contrary, significant difference can be found in the number of feet between the NS group and the EFL-Low group (p = .001* < .05), as well as between both groups of Thai learners: the EFL-High and the EFL-Low (p = .004* < .05).

The next part will qualitatively present the productions of foot boundaries in the NS, EFL-High, and EFL-Low group respectively. The numbers in the parentheses indicate the number of speakers that have a stress at each foot boundary.

NS-Group (n = 3)

$^{(3)}$/David $^{(3)}$/Beckham be$^{(3)}$/came a $^{(3)}$/famous $^{(3)}$/soccer $^{(3)}$/player in the $^{(3)}$/late 19$^{(3)}$/90s, and in 200$^{(3)}$/3 was the $^{(3)}$/most recog$^{(3)}$/nizable $^{(3)}$/athlete in the $^{(3)}$/world. He was a $^{(3)}$/popular $^{(3)}$/player $^{(3)}$/first in $^{(3)}$/England for Man$^{(3)}$/chester U$^{(3)}$/nited and $^{(3)}$/then in $^{(3)}$/Spain for $^{(3)}$/Real Mad$^{(3)}$/rid. They are $^{(3)}$/both suc$^{(3)}$/cessful and $^{(3)}$/very $^{(3)}$/rich $^{(3)}$/soccer $^{(3)}$/teams. $^{(3)}$/Beckham is a $^{(3)}$/valuable $^{(3)}$/player be$^{(3)}$/cause he can $^{(3)}$/take $^{(3)}$/dangerous $^{(3)}$/free $^{(3)}$/kicks and $^{(3)}$/pass the $^{(3)}$/ball $^{(3)}$/long $^{(3)}$/distances. $^{(3)}$/Beckham was a fan$^{(3)}$/tastic $^{(3)}$/leader. He $^{(3)}$/led his $^{(3)}$/country, $^{(3)}$/England, in the 200$^{(3)}$/2 $^{(3)}$/World $^{(3)}$/Cup where they $^{(3)}$/only $^{(3)}$/lost to Bra$^{(3)}$/zil. His $^{(3)}$/fans $^{(3)}$/also

res$^{(3)}$/pect him be$^{(3)}$/cause he is a $^{(3)}$/very $^{(3)}$/hard $^{(3)}$/worker on the $^{(3)}$/field and on the $^{(3)}$/training $^{(3)}$/ground.

From the NS production, it can be seen that their foot boundaries are all the same as theoretically predicted, in other words the assignments of stress are governed by the word accents. It should be noted that NS group's standard deviation is zero (SD = 0). This shows the absolute agreement among the three NSs towards the foot boundaries.

On the contrary, foot boundaries in Thai learners' productions were more varied, as seen from high value of standard deviation in the EFL-High group (SD = 4.12) and the EFL-Low group (SD = 4.10). Their foot boundaries are shown below, respectively.

EFL-High group (n = 15)

Da$^{(15)}$/*vid $^{(11)}$/Beck$^{(4)}$/*ham be$^{(15)}$/came $^{(1)}$/*a $^{(2)}$/fa$^{(13)}$/*mous $^{(9)}$/soc$^{(6)}$/*cer $^{(11)}$/pla$^{(4)}$/*yer $^{(1)}$/*in $^{(1)}$/*the $^{(15)}$/late 19$^{(14)}$/9$^{(1)}$/*0s, $^{(6)}$/*and $^{(4)}$/*in 200$^{(15)}$/3 $^{(1)}$/*was the $^{(15)}$/most recog$^{(15)}$/nizable $^{(12)}$/ath$^{(3)}$/*lete in the $^{(15)}$/world. He $^{(10)}$/*was $^{(1)}$/*a $^{(14)}$/popu$^{(1)}$/*lar $^{(14)}$/pla$^{(1)}$/*yer $^{(15)}$/first in $^{(15)}$/England for Man$^{(15)}$/chester U$^{(15)}$/nited and $^{(15)}$/then in $^{(15)}$/Spain for $^{(15)}$/Real $^{(15)}$/*Madrid. They are $^{(15)}$/both suc$^{(10)}$/cess$^{(5)}$/*ful and $^{(8)}$/ve$^{(7)}$/*ry $^{(15)}$/rich $^{(12)}$/soc$^{(3)}$/*cer $^{(15)}$/teams. $^{(15)}$/Beckham $^{(4)}$/*is $^{(1)}$/*a $^{(4)}$/va$^{(1)}$/*lua$^{(10)}$/*ble $^{(12)}$/pla$^{(3)}$/*yer be$^{(15)}$/cause he $^{(1)}$/*can $^{(15)}$/take $^{(11)}$/dange$^{(4)}$/*rous $^{(15)}$/free $^{(15)}$/kicks $^{(1)}$/*and $^{(15)}$/pass the $^{(15)}$/ball $^{(15)}$/long $^{(15)}$/distances. $^{(14)}$/Beck$^{(1)}$/*ham $^{(2)}$/*was $^{(2)}$/*a fan$^{(15)}$/tastic $^{(15)}$/leader. He $^{(15)}$/led $^{(2)}$/*his $^{(13)}$/coun$^{(2)}$/*try, $^{(14)}$/Eng$^{(1)}$/*land, $^{(2)}$/*in $^{(6)}$/*the 200$^{(15)}$/2 $^{(15)}$/World $^{(15)}$/Cup $^{(4)}$/*where they $^{(12)}$/on$^{(3)}$/*ly $^{(15)}$/lost $^{(1)}$/*to $^{(1)}$/*Bra$^{(14)}$/zil. $^{(3)}$/*His $^{(15)}$/fans $^{(2)}$/al$^{(13)}$/*so $^{(3)}$/*res$^{(12)}$/pect $^{(7)}$/*him be$^{(15)}$/cause he $^{(8)}$/*is a $^{(10)}$/ve$^{(5)}$/*ry $^{(15)}$/hard $^{(13)}$/wor$^{(2)}$/*ker on the $^{(15)}$/field $^{(3)}$/*and $^{(11)}$/*on the $^{(9)}$/train$^{(6)}$/*ing $^{(15)}$/ground.

EFL-Low group (n = 15)

$^{(4)}$Da$^{(11)}$/*vid $^{(8)}$/Beck$^{(7)}$/*ham be$^{(15)}$/came $^{(1)}$/*a $^{(3)}$/fa$^{(12)}$/*mous $^{(11)}$/soc$^{(4)}$/*cer $^{(12)}$/pla$^{(3)}$/*yer $^{(5)}$/*in $^{(4)}$/*the $^{(15)}$/late 19$^{(15)}$/90s, $^{(6)}$/*and $^{(11)}$/*in 200$^{(15)}$/3 $^{(9)}$/*was the $^{(15)}$/most recog$^{(10)}$/ni$^{(4)}$/*za$^{(1)}$/*ble $^{(6)}$/ath$^{(9)}$/*lete $^{(3)}$/*in the $^{(15)}$/world. He $^{(15)}$/*was $^{(2)}$/*a $^{(11)}$/popu$^{(4)}$/*lar $^{(14)}$/pla$^{(1)}$/*yer $^{(15)}$/first in $^{(15)}$/England $^{(2)}$/*for Man$^{(14)}$/ches$^{(1)}$/*ter U$^{(8)}$/ni$^{(7)}$/*ted and $^{(15)}$/then $^{(1)}$/*in $^{(15)}$/Spain $^{(1)}$/*for $^{(15)}$/Real $^{(15)}$/*Madrid. $^{(1)}$/*They $^{(1)}$/*are $^{(15)}$/both $^{(9)}$/*suc$^{(3)}$/cess$^{(3)}$/*ful $^{(1)}$/*and $^{(12)}$/ve$^{(3)}$/*ry $^{(15)}$/rich $^{(15)}$/soccer $^{(15)}$/teams. $^{(15)}$/Beckham $^{(6)}$/*is $^{(5)}$/*a $^{(5)}$/valu$^{(7)}$/*a$^{(3)}$/*ble $^{(15)}$/player be$^{(15)}$/cause he can $^{(15)}$/take

[11]/dange[4]/*rous [15]/free [15]/kicks [1]/*and [15]/pass the [15]/ball [15]/long [15]/distances. [15]/Beckham [4]/*was [5]/*a fan[15]/tastic [14]/lea[1]/*der. [1]/*He [15]/led [3]/*his [15]/country, [14]/Eng[1]/*land, [3]/*in [8]/*the 200[15]/2 [15]/World [15]/Cup [10]/*where [5]/*they [12]/on[3]/*ly [15]/lost [3]/*to [2]/*Bra[13]/zil. [5]/*His [15]/fans [2]/al[13]/*so [15]/*respect [1]/*him be[15]/cause he [13]/*is a [12]/ve[3]/*ry [15]/hard [14]/wor[1]/*ker [5]/*on [1]/*the [15]/field [5]/*and [10]/*on [2]/*the [14]/train[1]/*ing [15]/ground.

From the EFL-High and the EFL-Low productions, it can be seen that 100% of participants in both groups: the EFL-High and EFL-Low do not have problems in pronouncing one-syllable content words since they can stress all those words correctly.

Regarding variations of foot boundaries in both groups, it should be noted that problems in pronouncing polysyllabic words. Misplacement of stress in polysyllabic words and also stress on function words were found in the production of both groups due to the lack of linguistic knowledge of English accentual patterns

The problems and its total number of problems found in the production of both groups: the EFL-High and EFL-Low are concluded in Table 3.8.

Table 9: Problems of foot boundaries found in the EFL-High and EFL-Low's productions

Misplacement of accents	EFL-High	EFL-Low
1. Misplacement of stress in polysyllabic words	133	144
2. Stress placement on function words	83	159
Total errors found ($n = 519$)	216	303
Percentage of problems	41.62%	58.38%

As shown in Table 3.8, it can be noticed that the EFL-Low learners got higher percentage of problems towards foot boundaries (58.38%) than that of the EFL-High (41.62%).

Regarding the incorrect accentual patterns or misplacement of stress in polysyllabic words, most of students would assign stress at the final syllable of words which are: Da/*vid, Beck/*ham, fa/*mous, soc/*cer, pla/*yer, ath/*lete, popu/*lar, success/*ful, ve/*ry, valua/*ble, dange/*rous, Eng/*land, on/*ly, al/*so, wor/*ker and train/*ing. It is interesting to note that

assigning incorrect stress at the first syllable of words was also found as follows: /*Madrid and /*Brazil but these errors are rare.

In addition, stress placement on function words is also other problem found in foot boundaries of both groups: EFL-High and EFL-Low. They placed stress at the function words, i.e. /*in, /*was, /*for, /*is, /*a, /*are, /*on. This type of errors is found more in the EFL-L group (159) compared to the EFL-H (83). Whereas the number of errors in the misplacement of stress in both groups are quite close to each other (133 vs 144)

The following part will discuss the perception study. This is a study of the comprehensibility ratings judged by L1 English and L1 Thai English teachers towards the EFL-High and EFL-Low productions. The correlations between the numbers of problems found in the productions of the two groups of students and the values of comprehensibility ratings will be reported.

Perception Study

The perception study was done by asking 12 judges consisting of 6 L1 English teachers of English and 6 L1 Thai teachers of English to rate the degree of comprehensibility towards the readings of the 30 Thai learners. Descriptive statistical values in terms of mean, percentage, and standard deviation [SD] of the ratings are reported. For the study on the correlation of the production scores and the comprehensibility scores, One-way ANOVA [Post-Hoc Test], t-test and Pearson's Correlation is employed.

Table 10 below exhibits the judgments in terms of degree of comprehensibility rated by L1 English teachers (L1ET) and L1 Thai Teachers (L1TT) towards the productions of the EFL-High and EFL-Low groups are reported, as shown in Table 3.9.

Table 10: The L1ET and the L1TT's judgments on the degree of comprehensibility

Group	L1ET ($n = 6$)				L1TT ($n = 6$)			
	Min	Max	Mean	SD	Min	Max	Mean	SD
EFL-High	1	5	3.23	0.42	2	5	3.27	0.25
EFL-Low	1	4	2.73	0.13	1	5	2.50	0.18

According to Table 10, it can be seen that the EFL-High got higher comprehensibility scores from both groups of judges: L1ET (H, $\bar{x}$ = 3.23) and L1TT (H, $\bar{x}$ = 3.27) than that of the EFL-Low (L, $\bar{x}$ = 2.73) and L1TT (L, $\bar{x}$ = 2.50). To compare the comprehensibility ratings between L1ET and L1TT groups, t-test was used to analyze the differences. The following table will show significant differences in comprehensibility ratings of two groups: L1ET and L1TT towards the productions of Thai learners.

Table 11: T-test results for judgments of the L1ET and L1TT

Group	L1ET vs L1TT
	Sig.(2-tailed)
EFL-High (*n* = 15)	.765
EFL-Low (*n* = 15)	.251

*p < .05 (significant difference)

According to Table 11, it shows that the comprehensibility ratings of the EFL-High group judged by the L1ET ($\bar{x}$ = 3.23) and the L1TT ($\bar{x}$ = 3.27) did not differ significantly since the p value is more than .05 (p = .765). Also, the t-test result of the EFL-Low group did not show significant difference since the p value is more than .05 (p = .251). We can conclude that the comprehensibility ratings of both L1ET and L1TT judges towards the productions of the Thai learners are close to each other group.

The following table presents the t-test of the ratings the degree of comprehensibility of The EFL-High and EFL-Low. This analysis is to see whether the differences between the degree of comprehensibility of the production the two groups of students are significant or not. The analysis shows the statistical levels of both Judges Groups.

Table 12: T-test results for degree of comprehensibility of the groups of EFL-High and
EFL-Low

Judges Groups	EFL-High vs EFL-Low
	Sig.(2-tailed)
L1ET (*n* = 6)	.018*
L1TT (*n* = 6)	.002*

*p < .05 (significant difference)

Table 12 shows that there are significant differences in the mean scores between the degree of comprehensibility of the groups of EFL-High and EFL-Low rated by the L1ET (*p* = .018* < .05) and the L1TT (*p* = .002* < .05). We can conclude that the different degrees of comprehensibility between the EFL-High and EFL-Low found in the perceptions of both groups of judges are significant. The productions of the Low group yield a lower comprehensibility score compare to the High group that yield a higher comprehensibility score. This finding is found in both the native English teachers' judges and the native Thai teachers' judges.

The last question to be answered is whether there is any correlation between the production and the perception. Pearson Correlation's (*r*) between the problems in the participants' English rhythmical patterns and comprehensibility ratings is employed and presented in Table 13 below

Table 13: Pearson correlations (*r*) between the problems in the participants' English
rhythmical patterns and comprehensibility ratings

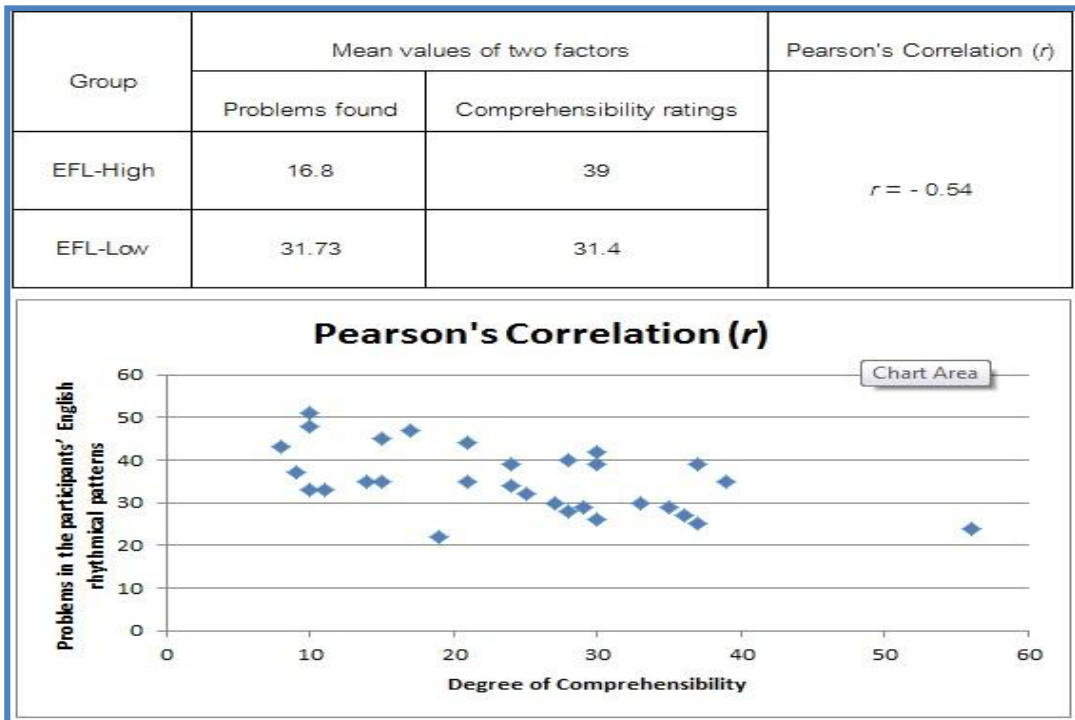| Group	Mean values of two factors		Pearson's Correlation (*r*)
	Problems found	Comprehensibility ratings	
EFL-High	16.8	39	*r* = - 0.54
EFL-Low	31.73	31.4	

Table 13 illustrates the Pearson's Correlation analysis. It shows a high negative correlation between the problems in the participants' English rhythmical patterns and comprehensibility ratings (*r* = - 0.54). The correlation value tells us that when there are more problems found in the production of rhythmical patterns, the degree of comprehensibility is getting low. That is to say, the judges have more difficulties comprehending the readings if students make lots of rhythmical errors. This will be further discussed and concluded in the next section.

Discussion and Conclusion

This study investigated the production of English rhythmical patterns by Thai learners and the perception of L1 English and L1 Thai English teachers.

In the production study, thirty undergraduate English majors from the School of Liberal Arts at Mae Fah Luang University were selected as samples of this study. The 30 students were selected from 222 first and fourth year English majors by their levels of English Language Experience. We selected those 15 students with the top high scores and 15 students with the lowest English language experience scores. The sample groups were asked to read aloud the

English passage. Then, their productions were analyzed and compared to the production of the native speakers (NSs) in terms of their rhythmical patterns. Halliday's framework of analysis in terms of was employed. This framework is known as the analysis of tonality or the division of speech into intonation or information groups divided by pauses and the division of the information groups into rhythmical units by the stresses. Both auditory analysis by the researcher and an expert, as well as the acoustic analysis using PRAAT software program are employed.

Regarding the perception study, 6 L1 English and 6 L1 Thai teachers of English were the judges in the study of the comprehensibility towards the readings of the Thai learners with two different interlanguage stages. They were asked to rate the comprehensibility scores with the 5-point comprehensibility likert scales (1 = very difficult to understand, 2 = difficult to understand, 3 = neutral, 4 = easy to understand and 5 = very easy to understand).

It was found that the productions of the English rhythmical patterns: tone group division and foot division of the EFL-High were more similar to those of the NS than the EFL-Low. To discuss, regarding English Language Experience, since learners' experience in learning the target language is a cumulative process in individual's knowledge and language uses (Postman, 1971; Luksaneeyanawin and Sudasna Na Ayudhya, 2002; Modehiran, 2005, Limsangkass, 2009; Pongprairat, 2011; Wong-aram, 2011; Tarnisarn, 2012; and Thaworn, 2012), their experiences in the target language will also contribute to the interlanguage stage of each learner. This shows that the target language experience of learners could affect their target language development. The English language experiences of students are related to their productions of English rhythmical patterns found in their readings. Each learner is at different interlanguage stage. With the use of English Language Experience Questionnaire, it is clear that the timeline of the fourth-year EFL-High group timeline is at a more advanced interlanguage stage compared to those first-year EFL-Low group. The Low group represents an early interlanguage stage. The fourth-year students have learned and have been exposed to English for longer time than the first-year students. Experiences play an important role in the reading performances as shown by the variations of the English rhythmical patterns in both groups of students..

The problems regarding English rhythmical patterns in the readings of the EFL-High and the EFL-Low were found at both tone group boundaries and foot boundaries. For tone group boundaries, pauses within phrases were found in both groups of students, but pauses within words were found only in the EFL-Low group..

Regarding pause within phrases, the learners chunked the information that did not coincide to major grammatical units, resulting as fragmented speech. For example, the pauses found within NP, as shown below.

"…in 2003 was <u>the most I* recognizable I* athlete</u> in the world."

                    (Adj.)   +   (Adj.)   +   (N.)

In terms of pauses within words, the EFL-Low group separated the syllables within the words, for example, play I* yer, ath I* lete, pop I* pular, Eng I* land, and on I* ly.

Regarding foot boundaries, incorrect accentual patterns shown by the misplacement of stress in polysyllabic words, and the misplacement of stress on function words were plentiful. The main problems occurred mostly at the foot boundaries or rhythmic units. Incorrect accentual patterns found in the misplacement of stresses in polysyllabic words were mostly found in front of the final syllables of the words, for examples, Da/*vid, Beck/*ham, fa/*mous, soc/*cer, pla/*yer, ath/*lete, popu/*lar, success/*ful, ve/*ry, valua/*ble, dange/*rous, Eng/*land, on/*ly, al/*so, wor/*ker and train/*ing. This could be the effect of L1 transfer because the last syllables of Thai words are accented and are always realized as stresses. Misplacement of stresses in front of the first syllable of words was also found but not many, for examples, /*Madrid and /*Brazil. This could be the effect of hyper-correction, i.e., the students thought that all English words are stressed on the first syllable and tried to anglicize it moving the stress to the first left syllable. In addition, the stress placements on function words such as /*in, /*was, /*for, /*is, /*a, /*are, /*on etc. are also found in common. Although Thai function words are also unstressed in unmarked situation and it should be easy for Thais not to stress the function words, these errors may be the effect of training. The students learn to stress the function words from their teachers.

We can conclude that the main problems found in the readings of Thai students arise from the differences of word accentual systems between Thai and English. Thai is a Fixed Accent Language, the word accents are right handed and always fall on the last syllable of the words. (Luksaneeyanawin, 1983, 1998, 2005, and Vairojanavong, 1984) whereas English is a Free Accent Language, word accents can fall on any syllables of the words, but mostly left-handed. The good readings of English are based on the correct assignments of word accents for each word within the information unit. English word accents are free and accents can be on any syllable of the word, the accentual pattern is specific to each word. Thai learners transfer Thai rhythmical patterns where the last syllables of the words are always on the last syllable. With L1 Transfer students would place the accents onto the last syllables of the English words. This could cause a big problem in comprehending their speech (Luksaneeyanawin, 1983, 1998, 2005; Vairojanavong, 1984; Sankhavadhana, 1988; Limsangkass, 2009; Pongprairat, 2011).

From our findings two interlanguage phenomena, namely, "L1 transfer" and "Overgeneralization of the target language" are found in the productions of Thai learners'. The findings support many former studies; Luksaneeyanawin, 1983, 1998, 2005; Vairojanavong, 1984; Sankhavadhana, 1988; Limsangkass, 2009, 2010; and Pongprairat, 2011.

As for our study on the problems in speech comprehension, we explored the correlation between the degree of comprehensibility and the number of problems found in the readings of the two groups of students. Pearson's correlation (r) was used for the study we found that there was a high negative correlation ($r = - 0.54$) value between the problems in rhythmical patterns and the degree of comprehensibility. The correlation value suggests that when there are more problems in the rhythmical patterns, the degree of comprehensibility are getting less. This indicates that listeners find it difficult to comprehend the speech when speakers made lots of errors in their speech. This may cause a communication breakdown. Crystal, 2003 and Graddol, 2006 claim that suprasegmentals play an important role to convey meaning in spoken communication and they are the central of communication, (Kang, Rubin, and Pickering, 2010). Undoubtedly, the training of English pronunciation in terms of suprasegmentals should be put into action for pedagogical purposes more in the classroom.

From the problems of the English rhythmical patterns performed by both EFL-High and EFL-Low learners discussed above, it can be seen that both groups had difficulties with the English accentual systems. On the contrary, tone group chunking and stress placement on function words are problematic only among the EFL-Low group. We probably need to incorporate more practices in the readings of nursery rhymes where there are a rich distribution of monosyllabic content and function words for students at the beginning level.

To design pronunciation courses and teaching materials, English accentual systems, word stress, and weak forms and strong forms should be emphasized as the first step for classroom lesson. Also, regarding the tone group division, students should be trained to chunk the speech into meaningful units which correspond to the syntactic, semantic and pragmatic features of the discourse.

Acknowledgements

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