



**ENGLISH MAJORS' STRESS ASSIGNMENT  
TO ENGLISH LOANWORDS**

**LAMPOON MEEPARP**

**A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR THE DEGREE OF MASTER OF ARTS  
MAJOR IN TEACHING ENGLISH AS A FOREIGN LANGUAGE  
FACULTY OF LIBERAL ARTS  
UBON RATCHATHANI UNIVERSITY  
YEAR 2009  
COPYRIGHT OF UBON RATCHATHANI UNIVERSITY**



**THESIS APPROVAL**  
**UBON RATCHATHANI UNIVERSITY**  
**MASTER OF ARTS**  
**MAJOR IN TEACHING ENGLISH AS A FOREIGN LANGUAGE**  
**FACULTY OF LIBERAL ARTS**

**TITLE** ENGLISH MAJORS' STRESS ASSIGNMENT TO ENGLISH LOANWORDS

**NAME** MR.LAMPOON MEEPARP

**THIS THESIS HAS BEEN ACCEPTED BY**

..... *Sirintip Boonmee* ..... CHAIR  
(DR.SIRINTIP BOONMEE)  
..... *Saisunee Chaimongkol* ..... COMMITTEE  
(DR.SAISUNEE CHAIMONGKOL)  
..... *Apisak Puipat* ..... COMMITTEE  
(ASST.PROF.DR.APISAK PUPIPAT)  
..... *Saowanee T. Alexander* ..... COMMITTEE  
(MS.SAOWANEE T. ALEXANDER)  
..... *Inthira Sahee* ..... DEAN  
(ASST.PROF.DR.INTHIRA SAHEE)

**APPROVED BY UBON RATCHATHANI UNIVERSITY**

..... *Utith Inprasit* .....  
(ASST.PROF.DR.UTITH INPRASIT)  
VICE PRESIDENT FOR ACADEMIC AFFAIRS  
FOR THE PRESIDENT OF UBON RATCHATHANI UNIVERSITY  
ACADEMIC YEAR 2009



## ACKNOWLEDGMENTS

I would like to express my gratitude to a number of people for their assistance and support for the completion of this thesis.

I would like to thank my thesis advisor, Dr. Sirintip Boonmee, and co-advisor, Ms. Saowanee T. Alexander for their extraordinary patience, useful advice and valuable help. Their feedback has helped me improve several aspects of my thesis, as well as enhanced my thinking skills. Many times I have disappointed them, but they have never given up on me.

Also, I would like to express my gratitude to the other members of my committee, Dr. Saisunee Chaimongkol and Assistant Professor Dr. Apisak Pupipat. Ajarn Saisunee made valuable comments and suggestions and Ajarn Apisak, who was also my excellent linguistics lecturer, lent me a number of interesting books and journal articles. Also, I would like to express my gratitude to Assistant Professor Dr. Somkiet Poopatwiboon who made additional suggestions of topic and scope of my thesis.

In addition, I would like to thank a number of people for their help and support. I owe a great deal to Ajarn Sukanya Puangtam, who was with me in Bangkok for my material hunting and gave me constant moral support. I am grateful to Ajarn Jirayu Sinsiri, Ajarn Suratchada Kaneungpian, and Ajarn Kanya Wattanagun, who kindly facilitated the recording of my participants' speech production. I would like to thank Ajarn Suwipa Chomphuboot and her parents for finding me some books for my thesis. I am also grateful to Ajarn Praichon Intanujit and Ajarn Craig McCaughey who edited sentences used in word-in-context task. My thanks also go to the freshmen of the English and Communication program who actively participated in the study. I am grateful to Ajarn Jariya Sutho, my MA classmate and one of my best friends who has helped me from the beginning and given me support throughout these years. I am fortunate that Mr. Sirichai Pibaanwong, a technician of the Liberal Arts Faculty, trained me on how to use Adobe Audition (Version 3.0). I also appreciate all the moral support from all of the ajarns in Western Languages and Literature Department. Lastly, I am indebted to Ubon Ratchathani University for the grant to support this thesis writing.

Finally, my special thanks go to my family for unconditional love and all kinds of support they have always offered me.

  
(Mr. Lampoon Meeparp)  
Researcher



### บทคัดย่อ

ชื่อเรื่อง : การออกเสียงเน้นหนักในคำยืมภาษาอังกฤษของนักศึกษาวิชาเอกภาษาอังกฤษ  
 โดย : ลำพูน มีภาพ  
 ชื่อปริญญา : ศิลปศาสตรมหาบัณฑิต  
 สาขาวิชา : การสอนภาษาอังกฤษเป็นภาษาต่างประเทศ  
 ปรธานกรรมการที่ปรึกษา : ดร. สิรินทร์ทิพย์ บุญมี

ศัพท์สำคัญ : การออกเสียงเน้นหนักในคำ คำยืมภาษาอังกฤษ

การศึกษานี้มีวัตถุประสงค์เพื่อศึกษา 1) รูปแบบการออกเสียงเน้นหนักในคำยืมภาษาอังกฤษที่มีสองพยางค์และสามพยางค์ของนักศึกษาวิชาเอกภาษาอังกฤษ 2) คำยืมภาษาอังกฤษและรูปแบบการออกเสียงเน้นหนักในคำที่เป็นปัญหามากที่สุดสำหรับนักศึกษา และ 3) ความสัมพันธ์ระหว่างการออกเสียงเน้นหนักในคำที่ปรากฏอยู่ในประโยคและการออกเสียงเน้นหนักในคำที่เป็นคำเดี่ยว

เครื่องมือที่ใช้ในการวิจัยคือแบบทดสอบการอ่านออกเสียงสองแบบ แบบทดสอบแรกเป็นการออกเสียงคำที่ปรากฏอยู่ในประโยคและแบบทดสอบที่สองเป็นการอ่านออกเสียงคำที่เป็นคำเดี่ยว ซึ่งในแต่ละแบบทดสอบนั้นประกอบด้วยคำยืมภาษาอังกฤษสองพยางค์จำนวน 30 คำ และคำยืมภาษาอังกฤษสามพยางค์จำนวน 30 คำรวมเป็น 60 คำ โดยมีนักศึกษาสาขาวิชาเอกภาษาอังกฤษและการสื่อสารจำนวน 29 คนเป็นกลุ่มตัวอย่าง การทดสอบมีขั้นตอนดังนี้ คือกลุ่มตัวอย่างทำแบบทดสอบการออกเสียงเน้นหนักคำที่ปรากฏอยู่ในประโยคก่อนแล้วจึงทำแบบทดสอบการออกเสียงเน้นหนักคำที่เป็นคำเดี่ยว ทั้งนี้มีการบันทึกการออกเสียงดังกล่าวไว้ในรูปไฟล์ mp3 จากนั้นผู้วิจัยใช้โปรแกรม Praat ในการตรวจสอบการออกเสียงเน้นหนักในคำของกลุ่มตัวอย่าง

ผลการศึกษาพบว่า กลุ่มตัวอย่างเน้นเสียงหนักพยางค์แรกของคำสองพยางค์มากที่สุดทำให้คำสองพยางค์ที่ต้องเน้นเสียงหนักในพยางค์ที่สองเป็นกลุ่มของคำที่ออกเสียงผิดและเป็นปัญหามากที่สุด ส่วนคำสามพยางค์นั้น กลุ่มตัวอย่างออกเสียงผิดโดยเน้นเสียงหนักพยางค์สุดท้าย

ผลการทดสอบการออกเสียงคำที่ปรากฏอยู่ในประโยคมีความสัมพันธ์เชิงบวกกับผลการทดสอบการออกเสียงคำที่เป็นคำเดี่ยว กล่าวคือผู้ที่ทำแบบทดสอบที่หนึ่งได้ดีมักจะทำแบบทดสอบที่สองได้ดีด้วย เมื่อเปรียบเทียบแบบทดสอบทั้งสองแบบแล้วพบว่า แบบทดสอบออกเสียงคำที่ปรากฏอยู่ในประโยคมีความยากกว่าแบบทดสอบออกเสียงคำที่เป็นคำเดี่ยวอย่างมีนัยสำคัญ



## ABSTRACT

TITLE : ENGLISH MAJOR' STRESS ASSIGNMENT TO ENGLISH  
LOANWORDS  
BY : LAMPOON MEEPARP  
DEGREE : MASTER OF ARTS  
MAJOR : TEACHING ENGLISH AS A FOREIGN LANGUAGE  
CHAIR : SIRINTIP BOONMEE, Ph.D.

KEYWORDS : STRESS ASSIGNMENT / ENGLISH LOANWORDS

The purpose of the study was to investigate 1) how Thai university English majors assign primary stress in English loanwords of two and three syllables, 2) the English loanwords and stress patterns most problematic to the learners, and 3) the relationships between the production of the words in sentences and the words in isolation.

Twenty-nine English and Communication majors at Ubon Ratchathani University were asked to take two word stress production test tasks: word-in-context task and word-in-isolation task. Each task comprised of 30 disyllabic loanwords and 30 trisyllabic loanwords, totaling 60. First, the participants individually performed word-in-context task and then word-in-isolation task. Both tasks were recorded and stored in a digital file format (.mp3) then analyzed by phonetic data analysis software called Praat to determine how the target words were stressed.

The results showed an overwhelming preference for the first syllable in disyllabic words. Error analysis also showed that the students tended to stress on the last syllable in trisyllabic words. It was also found that disyllabic words where primary stress falls on the second syllables were the most difficult to the students. Pearson's correlation coefficient ( $r_{xy} = 0.69$ ) revealed a positive relationship between the stress production in the word-in-context task and the word-in-isolation task. That is, those who performed well in the first task tended to perform well also in the second task. The results also indicated that the word-in-context task was significantly more difficult than the word-in-isolation task, suggesting a task effect.

## CONTENTS

	PAGE
<b>ACKNOWLEDGEMENTS</b>	<b>I</b>
<b>THAI ABSTRACT</b>	<b>III</b>
<b>ENGLISH ABSTRACT</b>	<b>IV</b>
<b>CONTENTS</b>	<b>V</b>
<b>LIST OF TABLES</b>	<b>VII</b>
<b>LIST OF FIGURES</b>	<b>VIII</b>
<b>CHAPTERS</b>	
<b>1 INTRODUCTION</b>	
1.1 Rationale	1
1.2 Purposes of the study	3
1.3 Research questions	3
1.4 Scope of the study	3
1.5 Significance of the study	4
1.6 Definitions of key terms	4
<b>2 LITERATURE REVIEW</b>	
2.1 What is stress?	5
2.2 The importance of stress	6
2.3 English stress patterns	6
2.4 Stress in Thai	10
2.5 English loanwords in Thai	11
2.6 EFL word stress problems	12
2.7 Previous studies	12
<b>3 METHODOLOGY</b>	
3.1 Subjects	16
3.2 Instruments	16
3.3 Data analysis	19
<b>4 RESULTS AND DISCUSSION</b>	<b>22</b>



**CONTENTS (CONTINUED)**

	<b>PAGE</b>
<b>5 CONCLUSION</b>	
5.1 Conclusion	43
5.2 Limitations of the study	44
5.3 Recommendations for further studies	45
5.4 Implementations of the study	45
<b>REFERENCES</b>	<b>48</b>
<b>APPENDICES</b>	
A Questionnaire	57
B List of words in sentences and in isolation	60
<b>VITAE</b>	<b>64</b>

## LIST OF TABLES

TABLE	PAGE
2.1 Thai stress patterns of di- and tri-syllabic words	11
3.1 Target words with different stress patterns	17
4.1 Distribution of tokens by stress placement types	23
4.2 Participants' pronunciation patterns across tasks	25
4.3 Participants' pronunciation of disyllabic words in the first word group	27
4.4 Participants' pronunciation of disyllabic words in the second word group	28
4.5 Participants' pronunciation of tri-syllabic words in the third word group	29
4.6 Participants' pronunciation of tri-syllabic words in the fourth word group	30
4.7 Students' average success rates by word groups	31
4.8 Students' success rates on the loanwords in sentences	32
4.9 Errors in the most problematic words in sentences	34
4.10 Students' success rates on loanwords in isolation	36
4.11 Errors in the most problematic words in isolation	37
4.12 Mean and standard deviation scores across tasks	38

## LIST OF FIGURES

FIGURE		PAGE
3.1	The word <i>coma</i> pronounced by a native speaker of English	20
3.2	The word <i>soda</i> correctly pronounced by a participant	20
4.1	Spectrogram of <i>technique</i> pronounced by a participant	35
4.2	Spectrogram of <i>cocaine</i> pronounced by a participant	35
4.3	Spectrogram of <i>oasis</i> pronounced by a participant	35
4.4	Pronunciation of disyllabic words in the first group	39
4.5	Pronunciation of disyllabic words in the second group	40
4.6	Pronunciation of trisyllabic words in the third group	41
4.7	Pronunciation of trisyllabic words in the fourth group	41



## **CHAPTER 1**

### **INTRODUCTION**

This chapter introduces the rationale, purposes of the study, research questions, scope of the study, significance of the study, and definitions of the key terms.

#### **1.1 Rationale**

It is widely accepted that pronunciation is one of the most important parts of oral communication. Its importance becomes apparent in second language communication because “there is a threshold level of pronunciation for nonnative speakers of English; if they fall below this threshold level, they will have oral communication problems no matter how excellent and extensive their control of English grammar and vocabulary might be” (Celce-Murcia, Brinton & Goodwin, 1996, p. 7). Educators, recently, seem to be awakened in promoting the notion that “intelligible pronunciation is an essential component of communicative competence” (Morley, 1994, p.1).

Today, many language classes mainly focus learners’ attention on using the target language to communicate effectively rather than instruction of discrete grammatical items. This pedagogical focus causes a major shift in teaching pronunciation for nonnative speakers of English. To help ESL/EFL learners acquire intelligible pronunciation, suprasegmental features of pronunciation such as rhythm, stress and intonation need to be incorporated in the teachers’ practice rather than a mere discussion of segmentals or individual speech sounds (Brown, 2000).

When it comes to suprasegmental issues, researchers have found that incorrect stress is one of the most important, most serious errors affecting intelligibility (Dickerson, 1992; Hahn, 2004; Pennington, 1996; Roach, 2000).

Moreover, it has been found that focused teaching of suprasegmental features like stress can help learners become more intelligible (Derwing, Munro, & Wiebe, 1998; Pennington, 1996). This idea well supports the concept that it is worthwhile to teach or focus on this aspect of pronunciation—stress. In the context of English learning in Thailand, although in the past recent years, Thai students have more exposure to English both inside and outside classrooms thanks to the advances in media and technology, which allow learners to have access to English, the vast majority of Thai learners of English still have great difficulties in the feature of pronunciation under the study—word stress. Many EFL researchers and educators have investigated suprasegmental pronunciation problems of Thai learners of English (Aungcharoen, 2006; Bourjan, 2003; Chomphuboot, 2005; Chuleethongrerk, 2006; Jarusan, 1997; Kanoksilapatham, 1992; Netsawang, 1999; Saknukulpaisan, 2003; Vairojanavong, 1984; Varasarin, 2007). They found that English word stress is problematic to their students/participants, especially in terms of stress placement. It is suggested that, as a shift in stress position in a word can change its meaning, English stress patterns should be emphasized in order to improve learners' communicative skills.

However, most studies conducted in Thailand have examined the stress problems of Thai EFL students/speakers in Bangkok. While some of the results were explained in terms of relationship between characteristics of central Thai and English, much still has to be done to confirm or discount the claims made by those studies. To add to this existing knowledge, the present study seeks to investigate students at Ubon Ratchathani University which is in the Northeast of Thailand.

Furthermore, few studies have explored the relationship between word stress production in isolation and in context (Chuleethongrerk, 2006). So far, the results of the studies are inconclusive. The current study therefore attempts to continue this strand of research.

Another motivation for the present study is that no studies in the Thai context have dealt with English loanwords which have consistently been adopted in the Thai language through mass media, e.g., radio, television, newspapers and the Internet. When those words were first adopted into Thai, their pronunciation was adapted in terms of both segmental and suprasegmental features partly due to the



influence by Thai (Kenstowicz & Suchato, 2005; Panlay, 1997). Thai learners of English have been familiarized with the adapted pronunciation of these words in Thai. It would be fruitful to examine whether they have problems producing these loanwords in isolation and in context in terms of word stress when these words are presented in the English mode, not as Thai loanwords of English origin.

This study aims to determine the patterns in which university students assign stress to English loanwords, word stress patterns most problematic to learners, and the relationship of word stress production of the words in isolation and in context.

## **1.2 Purposes of the Study**

This study aims to investigate:

- 1.2.1 The patterns in which Thai university English majors assign primary stress to English loanwords of two and three syllables,
- 1.2.2 The loanwords and stress patterns most problematic to the learners,
- 1.2.3 Potential differences and/or similarities between the production of the words in isolation and the words in sentences.

## **1.3 Research Questions**

- 1.3.1 How do Thai EFL learners assign primary stress in English loanwords of two and three syllables?
- 1.3.2 With which loanwords and which patterns do they have problems most?
- 1.3.3 Are there any relationships between the production of the words in isolation and the words in sentences?

## **1.4 Scope of the Study**

This study investigates the pronunciation of English major freshmen in the Faculty of Liberal Arts of Ubon Ratchathani University, Thailand. The study focuses on stress patterns in English loanwords with two and three syllables.



### **1.5 Significance of the Study**

The results of this research would help teachers identify potential problems in stress assignment. They would be beneficial to pronunciation teaching to improve learners' production, which in turn would help them orally communicate better in English. The results of this study would likely help teachers plan their lessons accordingly. For example, the results would be guidelines for teachers in designing instructional materials.

### **1.6 Definitions of key terms**

In this study the terms are operationally defined as follows:

Stress refers to “the emphasis placed on a particular syllable by pronouncing it more loudly or forcefully than those surrounding it in the same word” (Longman Dictionary of Contemporary English, 2009, p. 1745). In this study stress refers to primary stress only.

English loanwords refer to the words which are borrowed from English and are used in Thai. For the purpose of this study, only loanwords found in major Thai dictionaries are qualified for the analysis.

## **CHAPTER 2**

### **LITERATURE REVIEW**

This chapter offers a discussion of English word stress in terms of its definition, its importance, and its patterns, Thai stress patterns, English loanwords in Thai, EFL word stress problems and previous studies.

#### **2.1 What is Stress?**

Stress is defined as the emphasis given to a particular syllable of a word or a certain syllable in a word receiving the special attention. Speakers assign stress by pronouncing the target syllable louder, longer and higher in pitch than other syllables in polysyllabic words. In terms of airstream mechanisms in the production of stress, a stressed syllable requires extra air pressure reaching the vocal cords, caused by more muscular energy than is used for unstressed ones (Francis, 1989). Apparently, it is clearly pronounced that makes the vowel full and pure (Underhill, 2005; Wenxia, 2003). Many experts have agreed that three factors contribute to the prominence of syllables in words (Ashby & Maidment, 2005; Ball & Rahilly, 1999; Collins, 2003; Hewings, 1993a, 1993b; Hewings & Goldstein, 1999a, 1999b; Kelly, 2000; Kreidler, 1997; Lane, 1997; Miller, 2006; Morley, 1979; Pennington, 1996; Roach, 2000, 2001; Wells, 2008). They are volume, length and pitch movement. These factors result in the following acoustic characteristics:

- (1) the vowel in the syllable is longer;
- (2) the syllable is a little louder; and
- (3) the syllable is usually higher in pitch.

Apart from the three variables above, Anderhill (2005) also adds two more variables: clarity of articulation and a visual clue of larger movements of jaws, lips and face muscles.



Stress in traditional classification is divided into four major categories: primary, secondary, minor prominence and non prominence (Gimson & Cruttenden, 2001; Hewings, 1993b). For pedagogical implication, the differences among these categories are primarily determined by pitch change and vowel quality in words. Because of its pedagogical importance (Pennington, 1996), this study aims to investigate only primary stress.

## 2.2 The Importance of Stress

In English, stress is phonologically crucial because incorrect stress affects intelligibility—the ability to be understood. For example, the word *innocence* pronounced with the stress on the second syllable sounds like *in no sense* and when the stress falls on the last syllable, the utterance could be audibly perceived as *in a sense* (Dauer, 1993). Stress shift can alter the meaning of an utterance because incorrect stress also changes the vowels carrying such stressed syllable (Gilbert, 1993, 1994, 2000; Hahner, Sokoloff, & Salisch, 2002; Wells, 2006). Moreover, at the discursal level, unintelligible utterances resulting from wrong stress placement can lead to communication breakdown because different word and phrase stress can contribute to different meanings (Dauer, 1993; Gilbert, 1994). Thus, incorrect placement of stress among EFL or ESL learners is a problem which needs to be handled as a serious matter.

## 2.3 English Stress Patterns

This study adopted the acoustic-based approach to English stress. It followed the view that there are three major acoustic cues for stress: pitch, intensity, and duration (Beckman & Edwards, 1994; Ladefoged, 2003; Nguyen & Ingram, 2005; Sluijter, 1995). Therefore, only acoustic criteria based on the three factors were used to determine whether or not a syllable in question was stressed.

The literature of acoustic research on English stress demonstrates conflicting accounts as to the relative importance of acoustic cues for stress. While some researchers argue that pitch is the most powerful cue (Fry, 1958; Lieberman, 1960 as cited in Okobi, 2006), others suggest otherwise, arguing for the most dominating roles of either pitch or duration (Chun, 2002; Okobi, 2006). Although the

acoustic approach has some drawbacks as one might think that perceptually those syllables may not “sound” equally stressed, perceptual judgment by native speakers or trained phoneticians was not feasible given the context of this study because of time constraints and the absence of native speakers who were willing to participate in the research.

The following section offers a pedagogical classification of stress of di- and tri-syllabic words which were the focus of this study.

### 2.3.1 Two-syllable Words

The majority of high frequency two-syllable words have a stress on the first syllable (Cinthia, 2002; Morley, 1979). The following are examples from four word groups:

a) base words e.g. óver, áfter, mánage, lísten, spécial, fámous, sálad, dóllar, cópy, fáshion, fúnction, pártý, rácket, vírus, tóffee, ténnis, táxi, spónsor, sóda, cóma

b) compounds e.g. pássport, bréakfast, máybe, sómewhere, sómone

c) suffixed words e.g. ártist, úseful, clíníc, plástic, séxy,

d) proper names e.g. Jóhnson, Ríchard

Fewer than 20 percent of high frequency two-syllable words have a stress on the second syllable (Morley, 1979). Note that the second syllable of these words is not a suffix.

Examples:

succéss	evént	afráid	awáke	agáin
abóut	befóre	becáuse	untíl	apárt

Additional word group in this category includes borrowed words and some proper names.

Examples:

trombóne	shellác	machíne	guitár	casséte
hotél	cigár	cemént	Eláine	Joánne

In disyllabic verbs, stress tends to fall on the last syllable.

Examples:

desígn	expláin	promóte	remóve	salúte
--------	---------	---------	--------	--------



There are a few exceptions, recognizable by their endings. The exceptions to this rule are those verbs that end in *-er* and *-ish*. These endings form a group of disyllabic verbs with stress on the first syllable e.g. bóther and púnish.

In addition to these, words with certain endings like *-oon*, *-oo*, *-ique*, *-tain* (especially verbs), *-ee* and *-ade* also fall into this patterns.

Examples:

cartóon      shampóo      techníque      contáin      trainée      paráde

### 2.3.2 Three-syllable words

There are generally four stress patterns for tri-syllabic words: with stress on the first, on the second, on the third and on either the first or the last ayllable. Some general rules are identified to help determine where stress falls on words (Brown, 2005; Burzio, 1994; Collins & Mees, 2008; Cruttenden, 2001; Dauer, 1993; Dickerson, 1977, 1987, 1992; Dickerson & Finney, 1978; Hancock, 1998, 2003; Hewings & Goldstien, 1999; Kelly, 2000; Kreidler, 1989, 1997, 2004; Lane, 1997; Morley, 1979).

#### Stress on the first syllable

In words with three syllables, stress can be determined by their endings. Certain suffixes, such as, *-ical*, *-itive*, *-itude*, *-ity*, *-ate*, *-ize/ise* and *-ify* have fixed stress patterns. Words with these endings carry stress on the first syllable.

Examples:

phýsical      pósitoive      áttitude      quálity      públicize      récognize  
stímulate      óperate      módify      clárfify      órganize

Trisyllabic nouns that have the second and the third syllables as weak ones are stressed on the first syllable.

Examples:

mégahertz      cáravan      márathon      óxygen      cónference  
vítamin      Cátholic      bákerý      bátttery      cálorie

### Stress on the second syllable

If a three-syllable word has the letter *i* (not pronounced as an extra syllable) in the last syllable, and a palatal or palatalized onset: /ʃ/, /ʒ/, /tʃ/, /dʒ/, /y/ before the letter *i*, the stress is on the second syllable (Morley, 1979).

Examples:

official      corrupción      suggésion      famíliar      opínion

Another group of words in this pattern includes loanwords from Spanish/Italian/Portuguese with a final open syllable (ending with a vowel) spelled with *-a*, *-o*, *-i*.

Examples:

mosquíto      tomáto      banána      papáya      spaghétti      salámi

In addition to these, words with roots/root-like syllables in the middle also follow this pattern.

Examples:

unwánted      recýcle      compúter      depósit      devélop      discrédit

Words that end with suffixes like *-al*, *-ic* also follow this stress pattern.

Examples:

arríval      propósal      elétric      gymnástics      Olýmpic

Trisyllabic nouns that have the last syllable as a weak one are stressed on the second syllable.

Examples:

appéndix      bacíllus      horízon      transístor      eléctron      oásis

### Stress on the third syllable

Words of three syllables with certain suffixes (e.g. *-eer*, *-ese*, *-aire*, and *-ee*) carry stress on the last syllable.

Examples:

enginéer      Japanése      millionáire      employée

Additional words with this pattern are verbs that have roots/root-like syllables at the end.



Examples:

disappóint      disappéar      overcóme      introdúce      understánd

**Stress optionally on the first or the third syllable**

There are some words of three syllables that can be correctly stressed on either the first or last syllable.

Examples:

mágazine	gásoline	cígarette
magazíne	gasolíne	cigarétte

The last two patterns described above were not included in the study because there were not sufficient English loanwords with these patterns in Thai.

## 2.4 Stress in Thai

Although this study was not designed to test any hypothesis regarding the role of Thai, as an L1, on the learners' interlanguage system of stress, it is still fruitful to discuss phonetic characteristics of Thai stress, which may interact with learners' interlanguage stress. Such discussion may shed light on the interpretation of the results of this study.

In general, unlike English, stress in Thai is not contrastive in terms of word meaning. Lexical tones, on the other hand, significantly change the meaning of Thai words. In Thai, a disyllabic word is commonly stressed on the last syllable (Gandour, 1976; Peyasantiwong, 1986; Nahthong, 2001; Warotamasikkkhadit, 1967, 1970, 2002; Wong-Opasi, 1992) e.g. /ka:n'bâ:n/ 'homework'. However, sometimes, more than one syllable is stressed in words of more than two syllables e.g. /prà?'tɕʰa: sǒŋ'kʰrɔʔ/ 'public welfare'.

According to Warotsikhhadit (2002), Thai di- and tri-syllabic words have different stress patterns as illustrated in the following table.

**Table 2.1** Thai stress patterns of di- and tri-syllabic words

Syllable No.	Stress Patterns	Examples	Meaning
2	1) Unstressed-Stressed	ไพศาล /p <sup>h</sup> ai'sǎ:n/	enormous
2	2) Stressed-Stressed	ยัวยัว /'yúa?'yía?/	swarm (with)
3	3) Stressed-Unstressed-Stressed	ราชการ /'râ:tɕ <sup>h</sup> á'ka:n/	government service, official
3	4) Unstressed-Stressed-Stressed	พิธีการ /p <sup>h</sup> í't <sup>h</sup> i'ka:n/	ceremony, protocol

When stress is placed on a different syllable in Thai words, the utterance merely sounds strange, but does not change the meaning of the word. Therefore, it is possible for inexperienced Thai students not to be aware of the significance of stress placement when pronouncing English words.

## 2.5 English Loanwords in Thai

English words began to enter the Thai language system in the reign of King Rama IV and English loanwords became more widespread in the reign of King Rama V (Nacaskul, 1979). Thanks to technological advancements, a large number of English loanwords have poured into Thai through such mass communication media as television, movies, and the Internet. The English loanwords in Thai have been used in different fields including sciences, food and drinks, clothes and fashion, game and gambling, persons and positions, measurement, education, art, and recreation (Nacaskul, 1979). When these words entered Thai, they were phonologically adapted to conform to different features of pronunciation in Thai both at the segmental and suprasegmental levels including syllabification and tone choices (Gandour, 1979; Kenstowicz & Suchato, 2005; Panlay, 1997). Such adaptation has rendered these words phonetically distinct from its English original version.



## 2.6 EFL Word Stress Problems

EFL learners whose L1 suprasegmental feature –word stress– is different from English can experience difficulties in placing stress in words (Anani, 1989; Archibald, 1998; Avery & Ehrlich, 1994; Baker & Goldstein, 1990a, 1990b; Collins & Mees, 2006, 2008; Hahner, Sokoloff, & Salisch, 2002). Some notable problems are as follows:

- (1) Stressing final syllables of words, e.g., French, Farsi, Thai and Lao learners.
- (2) Stressing the second-last syllable, e.g., Spanish, Portuguese, Polish, and Welch speakers.
- (3) Stressing all the syllables and failing to reduce unstressed syllables, e.g., Italian, Chinese, Vietnamese and Greek learners. Unstressed syllables seem to be given equal weight.
- (4) Stressing English syllables or words by high pitch (not including duration), e.g., EFL learners from languages of origin like Hindi, Hebrew, Japanese and Korean. They fail to distinguish the length and loudness of vowels in English stressed syllables from unstressed ones. That makes their speech sound too even.
- (5) Stressing too many syllables, e.g., Arabic, Chinese speakers.
- (6) Using a high pitch with unstressed syllables, e.g., Swedish, Norwegian, Danish speakers.
- (7) Stressing the first syllable of words or phrases, e.g., Czech speakers.
- (8) Stressing the syllables with long vowels or diphthongs, e.g., Jordanian learners.

As shown above, non-native speakers of English display different problems regarding stress. Some problems are characterized by shifting of stress location, vowel quality, inability to assign proper cues to stress, and so on.

## 2.7 Previous Studies

Some Thai researchers have carried out studies investigating word stress placement of EFL learners/speakers. They claimed that Thai, as the native language, influenced the participants' proficiency in word stress placement in English. They also



went on to claim that English word stress misplacement led to misunderstanding in oral communication. In what follows, examples of these studies are described.

Aungcharoen (2006) carried out a study to investigate word stress perception and production of 12<sup>th</sup> -grade students at Benchamaratcharungsarit School in Chachoengsao province. The participants were divided into four groups by their gender and proficiency: (a) 40 male students with high proficiency in English, (b) 40 male students with low proficiency in English, (c) 40 female students with high proficiency in English, and (d) 40 female students with low proficiency in English. Data were obtained through word stress perception and production tasks. The participants were asked to listen to a word list pronounced by a native speaker of English and to mark the stressed syllable for each word they heard. Then, they read the same word list for the production task. Pearson's correlation coefficient and the *t*-test were used to test the research hypotheses. The results supported the hypotheses that there was a positive relationship between the students' word stress perception and production skills and that the students scored significantly higher on word stressed on the ult (last syllable) than those stressed on the penult (second-last syllable) or the antepenult (third-last syllable). The results also showed that the students with high proficiency in English outperformed their low proficiency counterparts in word stress perception and production tasks, which supported the hypotheses. However, the results did not support the hypothesis that females scored higher on the word stress perception and production tests than did males. This result indicated that female and male participants' word stress perception and production skills did not differ.

Saknukulpaisan (2003) investigated stress patterns of English words with two-to-five syllables pronounced by 30 Thai sales representatives and 30 secretaries in three Japanese trading companies. All of the participants had more than 2 years of work experience. They were asked to pronounce the word list containing 15 words with 2 syllables, 15 words with 3 syllables, 15 words with 4 syllables, and 15 words with 5 syllables. The results of the study showed that words with four and five syllables were the most problematic to the participants. Most participants explained that they did not know the correct stress placement of polysyllabic words and they paid no attention to stress patterns. They tended to imitate stress patterns from their customers and suppliers. Some participants complained their university did not



provide pronunciation course about stress pattern practices. This study has shown the number of syllables was a factor in determining the degree to which Thai speakers produce word stress correctly.

Bourjan (2003) conducted a study to investigate problems with English word stress placement of Thai grade 12 students. Ten Mattayomsuksa in Mahasarakham were asked to read word lists containing polysyllabic words including verbs, nouns, adjectives, and adverbs. The results of the study showed that the students had problems with word stress in all lexical categories under investigation. The author concluded that probable cause may be an influence of Thai because a number of students placed primary stress on more than one syllables in polysyllabic words, which was claimed to be a characteristic of Thai.

Chuleethongrerk (2006) examined the ability to assign primary stress to disyllabic words. The participants were fourth-year students of English Business Communication at Siam University. They were asked read aloud words in two context: in isolation and embedded in a reading passage. The results revealed that disyllabic words with the stress on the second syllable were stressed more correctly than those with the stress on the first syllable. Words in isolation were stressed more correctly than their counterparts embedded in context.

Jarusan (1997) conducted a study to investigate the relationship between the perception and production of English word stress by native speakers of Thai. Eighty students studying at Rangsit University took part and were divided into four groups based on their self-reported experience with English and listening ability: (a) high English experience, (b) low English experience, (c) strong listening ability and (d) weak listening ability. All the participants were given a four-part English word stress test. First, the participants read unknown words in the word list. Second, they identified the primary stressed syllable of nonsense words pronounced by a native speaker of English. Third, they pronounced and marked the primary stressed syllable of the unknown words. Fourth, the participants pronounced the same target words for the second time. A Pearson's Correlation coefficient ( $r_{xy}$ ) was used to analyze the relationship between word stress perception and production. The results of the study revealed a medium positive relationship between word stress perception and production ( $r_{xy} = 0.32$ ) at the significant level of 0.01. That is, students who correctly



identified the primary stress of each word were likely to produce the primary stress on the correct syllable of each word. However, the majority of the participants placed the primary stress on the last syllable of each word, which was incorrect in most cases. The author concluded that the problem of English word stress misplacement resulted from a transfer from Thai.

Sasi-Smit (2005) conducted a study to investigate whether incorrect of English word stress affects comprehensibility and stress patterns of Thai speakers of English. The participants of this study were 30 staff members of a shipping company who were divided into two groups by their frequency of communication with English native speakers. The instrument included a set of questions on the background information of the subjects, production tests and comprehensibility judgment on the production test results. The participants were asked to pronounce the list of target words. The words were tri-syllabic words with three different stress patterns: the stress on the first, the second and the last syllable. The results showed that the target words with the stress on the third syllable were the most difficult for the participants. The researcher suggested that there was no interference from Thai stress patterns. The other results showed that the pronunciation of the participants was comprehensible by three native speaker judges. However, the researcher did not claim the speakers' proficiency but argued that familiarity with Thai speakers' pronunciation of English facilitated the native speakers' comprehensibility.

In summary, this chapter has shown that stress placement is a common problem among learners of English. Research has been conducted which documented the nature and explanation regarding such a problem. As shown above, the most common explanation for stress problems among Thais was L1 transfer although those studies were not designed to test such hypothesis.





## **CHAPTER 3**

### **METHODOLOGY**

This chapter describes in detail the subjects, instruments, data-gathering procedures and data analysis employed in the present study.

#### **3.1 Subjects**

Twenty-nine English major freshmen at the Faculty of Liberal Arts, Ubon Ratchathani University, Thailand, participated in the study. The data from the participants were collected at the end of the second semester of the academic year 2009. Their participation was voluntary, and they were financially compensated for the time they devoted to the study. Of these, 7 were males and 22 were females. Their age ranged between 17 and 20 years old. The first-year students were chosen for this study because they were new to intensive English instruction at the faculty. Tapping into their pronunciation ability will be fruitful to the design of the phonetics course which they need to take as one of the program requirements. At the time the data were being gathered, these students had taken two English fundamental courses: Foundation English for Liberal Arts Students and English for Liberal Arts Students. In both courses, they studied weekly with native English speakers for 6 hours and 4 hours with Thai instructors. Therefore, they spent at least 10 mandatory hours studying intensive English. The instruction, however, did not explicitly focus on pronunciation training.

#### **3.2 Instruments**

##### **3.2.1 Pronunciation Task**

In order to obtain stress samples from the students, the researcher designed a pronunciation task in which each student would pronounce identical target words in two different contexts: in isolation and in a sentence. In what follows the researcher described the word lists for the task and the procedures used to obtain the speech sample.

*Word lists.* There were two lists. The first list contained 60 English words written in sentences, and the other list comprised the same words in isolation (See Appendix B). These words were chosen because they exist in Thai as loanwords from the English origin. In choosing the words, the researcher searched for English loanwords in two most-referenced Thai dictionaries: the Thai Dictionary (the Royal Institute, 1999) and the Dictionary of New Words (the Royal Institute, 2007). To maximize the generalizability power of the study, I purposively searched for words with two and three syllables each of which had two stress patterns. This yielded four distinct categories of target words based on their syllable counts and stress patterns as follows:

- (1) disyllabic words with stress on the first syllable,
- (2) disyllabic words with stress on the last syllable,
- (3) trisyllabic words with stress on the first syllable, and
- (4) trisyllabic words with stress on the second syllable.

**Table 3.1** Target words with different stress patterns

Patterns							
No.	1	No	2	No.	3	No.	4
1	clinic	16	balloon	31	bakery	46	bacillus
2	coma	17	cartoon	32	battery	47	commando
3	copy	18	cement	33	calorie	48	computer
5	fashion	20	cocaine	35	Catholic	50	discredit
6	function	21	guitar	36	conference	51	electron
7	party	22	hotel	37	dinosaur	52	gymnastics
8	plastic	23	offside	38	dynamite	53	oasis
9	racket	24	promote	39	hamburger	54	Olympic
10	sexy	25	salute	40	marathon	55	recycle
11	soda	26	shampoo	41	megahertz	56	romantic
4	sponsor	19	cigar	34	caravan	49	corruption
12	taxi	27	shellac	42	microphone	57	spaghetti
13	tennis	28	technique	43	nicotine	58	tornado
14	toffee	29	trombone	44	oxygen	59	torpedo
15	virus	30	unseen	45	vitamin	60	transistor



Each category consisted of fifteen words. Therefore, the total number of target words was 60. These words were typed (1) as a list of words embedded in a sentence to be used as a reading script for the first read aloud task and (2) as a list of isolating words used as a script for the second read aloud task. The stress patterns would be called *word group* for easy reference and discussion.

*Demographic questionnaire.* To safeguard the interpretation of the results, a demographic questionnaire was designed to collect some background information of the students. This questionnaire comprised questions on the participants' educational background including their experience abroad, their participation in English activities such as English camps or clubs, how they practice their English, and what their English pronunciation problems are.

To eliminate a possibility of misunderstanding due to the student's limited knowledge of English, the questionnaire was written in Thai. To assist the students with questionnaire completion, all the questions asked in the questionnaire were explained and the participants were allowed to ask for clarification when they were in doubt. Once again, the information gathered through this questionnaire would only be used to explain outliers, if any, only.

*Recording procedures.* Each student met with the researcher individually for a recording session. First, the students were given task directions in which they were explicitly told that they were to read aloud words in English, that they were expected to pronounce them with the stress patterns which they thought the words should receive, and that they could take as much time to practice pronouncing the words. The rationale behind this approach was that the students would be given the opportunity to deliver the best pronunciation they could under the least amount of fatigue. After the orientation, the students were given the list of target words embedded in sentences. When ready, the students put on a head-mounted microphone adjusted to a position appropriate for voice recording. The microphone was connected to a desktop computer running sound recording and editing software called Adobe Audition (Version 3.0). The actual recording started when the student began reading out loud each word until he/she finished the entire list of 60 words. For the second task, the students were given a list of the same target words in isolation. The rest of the recording procedure followed the same steps used in the first task. On the average,



the total time spent on each recording session was 20 minutes. The recording gained from all 29 students were then excised and stored as individual sound files. These sound files were 3,480 in number (29 speakers x 60 words x 2 tasks).

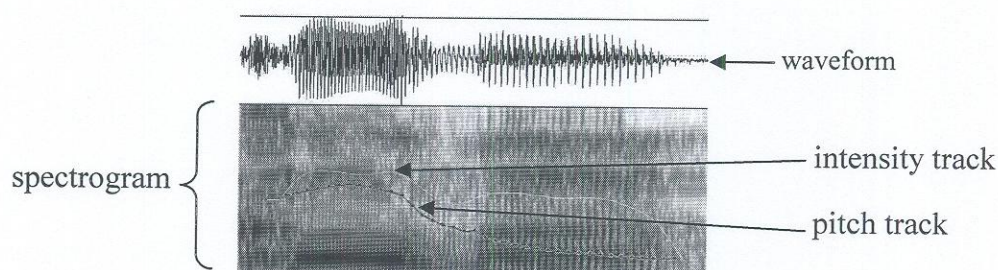
### 3.3 Data analysis

Recall that this study followed the acoustic approach to the study of stress described in the previous chapter. Thus, the production results were analyzed accordingly. The following section will provide a detailed description of the analytical procedures employed to answer each research question.

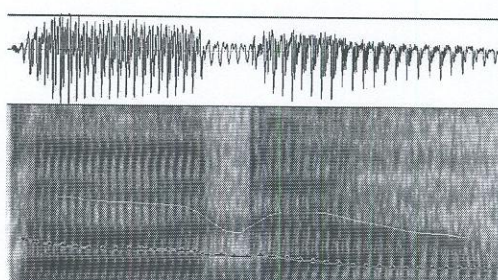
To answer the first research question about how the learners assign stress to the target words, the criteria for determining primary stress were established based on the acoustic properties of the learners' pronunciation. Then stress assignment patterns were identified in terms of whether the placement was correct or not. In cases where misplacement occurred, the errors were noted.

To determine primary stress, the recorded data were measured for intensity (loudness), duration (length), and frequency (pitch) as they were acoustic cues for stress. As mentioned before, there is no consensus among phoneticians as to the relative dominances of each cue. For this reason, without compromising the analysis of the data, this study has opted to take the majority rule. By this rule, all syllables in the word in question would be measured for pitch, intensity, and duration. Any syllable with the highest values of measurement for at least two out of the three parameters would be marked as receiving the primary stress. In cases where more than one syllable fit the criteria, all of them would be considered to bear the primary stress. With these criteria, the participants' recordings were then analyzed by the software for phonetic data analysis called Praat developed by Boersam and Weenink (2001) under the thesis advisor's supervision. Praat was used to locate the stressed syllable(s) in each target word, for it can illustrate pitch levels in hertz (Hz), intensity (volume) in decibels (dB), sound waveform with measurement of duration in milliseconds (ms), and the overall spectrographic qualities of each word (See Figure 3.1 and Figure 3.2). These measurements of the three key features were taken, ranked, and used to determine stress syllables.





**Figure 3.1** The word *coma* pronounced by a native speaker of American English



**Figure 3.2** The word *soda* correctly pronounced by a participant

With respect to the second research question concerning relative difficulty of stress placement among the target words, the words were first ranked for their success rates. To do this, each word was assigned a score based on whether or not it received correct stress placement. The criteria for grading the recorded words were adopted from those used in Aungcharoen's study (2006). A correct assignment of stress for each token was worth one point. The student would receive one point for each token if and only if they stressed on the correct syllable; additional primary stress on any other syllable nullified the gained point. Any of the following pronunciation errors results in 0 for the token in question: stress on a wrong syllable; mispronunciation to the extent that changed the original number of syllables in any shape or form (either diphthongization or vowel lengthening); or a complete failure to correctly pronounce any segment in the target token. This scoring criterion allowed each student to have a maximum of 120 points (60 tokens x 2 tasks) and a minimum of 0. The production scores for the students were then tallied and analyzed for means, standard deviation, and other relevant inferential statistics in order to answer the



research question. These scores were used to do the following analyses: 1) to determine how difficult the target words are to the other words under study and 2) to compare the distribution of scores across the four word groups. It is important to note that these pronunciation scores termed “success rates” do not imply the speakers’ pronunciation knowledge; it simply reflects the degree to which the speakers pronounced the word correctly. In addition to this, relative degree of difficulty in terms of stress was determined by a set of criteria adopted by Bourjan, (2003). They were described as follows.

(1) If the percentages of the students who assign the primary stress to the correct syllables in words range from 0 to 30%, it means the students have got problems on stress with a very high degree of seriousness.

(2) If the percentages of the students who assign the primary stress to the correct syllables in words range from 31 to 50%, it means the students have got problems on stress with a high degree of seriousness.

(3) If the percentages of the students who assign the primary stress to the correct syllables in words range from 51 to 70%, it means the students have got problems on stress with a moderate degree of seriousness.

(4) If the percentages of the students who assign the primary stress to the correct syllables in words range from 71 to 100%, it means the students have got problems on stress with a low degree of seriousness.

To answer the third research question about whether or not there is any task effect on the learners’ stress assignment, a one-way repeated-measure ANOVA analysis was conducted on the students’ mean stress placement scores (as described above) for each task. This is to determine whether there was any significant difference in the student’s performance on each task condition. The results of the analysis will be presented in the next chapter.



## CHAPTER 4

### RESULTS AND DISCUSSION

This chapter presents the findings and discussion. Recall that the participants of the study were 29 English Major Freshmen from the Faculty of Liberal Arts, Ubon Ratchathani University. Data from this study were obtained through word stress production tests taken by the participants. The tests yielded 3,480 speech tokens (60 words x 2 conditions x 29 speakers). Of these, 1,740 were tokens produced in isolation and another 1,740 in context (embedded in sentences).

The finding sections will offer answers to individual research questions reiterated below.

*(1) How do Thai EFL learners assign primary stress to English loanwords of two and three syllables?*

*Correct stress placement.* A description of the learners' stress assignment would not be complete without describing the degree to which they correctly placed stress on the target tokens. As Table 4.1 has shown, the students' performance was above average; they correctly assigned stress 56.15% of the time. They were most successful with the first word group containing disyllabic words with the target stress on the first syllable and were least successful with the second word group containing disyllabic words with the target stress on the second syllable.

**Table 4.1** Distribution of tokens by stress placement types

Category	Word Group				Total	Percent
	1	2	3	4		
<b>Correct placement*</b>	742	373	414	425	1954	56.15
<b>Incorrect placement</b>						
Stress shift	110	422	419	417	1368	39.31 (94.54)**
Syllabic addition	1	35	1	0	37	1.06 (2.56)**
Multisyllabic stress	10	13	5	4	32	0.92 (2.21)**
Syllabic deletion	0	0	1	9	10	0.29 (0.69)**
<b>Total (incorrect placement)</b>	121	470	426	430	1447	n/a
Incomprehensible tokens	7	27	30	15	79	2.27
<b>Total</b>	870	870	870	870	3480	100 (100)

*Note.* \*The correct placement for the first and third word groups is on the first syllable while that for the second and fourth word groups is on the second syllable.

\*\*The numbers in parentheses refer to the percentages of particular error types based on the total number of errors.

*Incorrect stress placement.* Table 4.1 also shows that incorrect placement appeared in 1,447 tokens (excluding incomprehensible cases) or 43.85% of the entire corpus. The most common stress placement problem was stress shift which accounted for 39.31% of all tokens, and as much as 94.54% of all placement errors. Stress shift here refers to cases where the speakers stressed on the wrong syllable instead of the target one when only primary stress was assigned to only one syllable in the entire word. For instance, they stressed on the second syllable when the correct one was the first.

The next erroneous assignment pattern was syllabic addition whereby an extra syllable was added to the target words. Although this error is not in itself a stress problem, adding an extra syllable affects the order of the syllable receiving stress and may alter the vowel quality of adjacent syllables. Anyway, although this error type was ranked second in number, these cases only accounted for 2.56 percent of all errors. However, it is interesting to note that this type was highly common among the second word group containing disyllabic words. A look at the target words suggests that it was possible that the learners did not know the words as they were spelled in English. Thus, they may have guessed how they should be pronounced based on the orthography. Take the words *tech.nique* and *co.caine* as an example (orthography is



used for a simple illustration). A learner re-syllabified them as *tech.ni.que* and *co.ca.ine* despite the fact that these words were relatively common loanwords in Thai. If this was the case, English orthography may have added to the pronunciation that the learners have.

Another assignment pattern is multisyllabic stress which accounted for 2.21 percent of all errors. Therefore, this problem was not considered to be very problematic to the learners in this study. In multi-syllabic stress cases, instead of assigning primary stress on just one syllable, the speakers put acoustically equal weight of stress on two syllables. Note that such cases were observed in both di- and tri-syllabic words although they occurred more much frequently in disyllabic words (Group 1 and 2). In case of tri-syllabic words, it is interesting to note that none of the learners assigned primary stress on all three syllables, which could have required an extra articulatory effort. However, it is acknowledged that one might argue on the theoretical ground that equal weight of stress on all syllables of a particular word can be taken as evidence for the lack of primary stress on that word at all because the term *primary* implies a *relative* prominence of a syllable. For this reason, disyllabic words receiving stress on both syllables (measured by acoustic signals suggesting full articulation of the target words) were regarded as carrying only stress but not *primary* stress. It is therefore acknowledged here that the acoustic measurement alone turns out to be a limitation in itself and does not suffice to help us fully understand the status of stress in English. However, as uncommon as it may be, the presence of so-called multisyllabic stress calls for some explanations. The first possible reason for this is that the learners simply “play safe” by assigning relative weight to all syllables because they did not know what the primary stress for the target words were. Another possible explanation was that they have not gained the control of their articulation. It was also possible that they knew which syllable should carry the most weight but they were not able to deliver such articulation. This is common among adult learners whose phonetic system is fossilized. Further studies with large corpuses of data may confirm or refute these explanations.

The least common type of error was syllable deletion, which accounted for 0.69 percent of all errors. Unlike the previous three types of errors, this type was not



deemed problematic to the learners. However, of the 37 erroneous tokens of this type, 35 tokens, or 94.5 percent occurred in the second word group.

*Incomprehensible cases.* The rest of the problem cases include renditions of the words which were audibly incomprehensible, so they were noted but not acoustically analyzed.

*Preference for the first syllable.* A remarkable characteristic of the production results was that the participants generally preferred to assign primary stress on the first syllable. As indicated in Table 4.2 below, regardless of the number of syllables of the target words, correct stress placement falls on either the first or second syllable only. Given this condition, if all speakers had correctly stressed all target words, this would have resulted in a maximum of 1,740 correct tokens for words with stress on the first syllable (15 tokens x 2 word groups x 29 speakers) and another 1,740 correct tokens for words with stress on the second syllable. See Table 4.2 below.

**Table 4.2** Participants' pronunciation patterns across tasks

Pronunciation patterns	Disyllabic words		Trisyllabic words		Total	
	Tokens	Percent	Tokens	Percent	Tokens	Percent
1st syllable	1164	66.9	648	37.24	1812	52.07
2nd syllable	483	27.76	588	33.79	1071	30.78
3rd syllable	0	0	439	25.23	439	12.62
More than 1 syllable	23	1.32	9	0.52	32	0.92
Add 1 more syllable	36	2.07	1	0.06	37	1.07
Delete 1 syllable	0	0	10	0.57	10	0.29
incomprehensible	34	1.95	45	2.59	79	2.27

However, it was found that the entire production corpus contained 1,812 tokens with stress on the first syllable (showing 72 tokens, or 4.1%, more than expected) and 1,071 tokens with stress on the second syllable (showing a robust number of 669 tokens, or 39.45%, fewer than expected). Note that these numbers were based on overt cases of first and second syllable stress placement only; cases of primary stress placement on two syllables where either the first or second syllables received primary stress were not counted as part of this group. Even so, this strongly suggests that the participants showed a bias toward the first syllable and against the



second syllable. As bias may be a confounding factor, the success rates must be carefully interpreted as one cannot rush into a conclusion that the speakers “know” how to pronounce words with the first and third patterns (with stress falling on the first syllable) and “does not know” how to pronounce words with the second and fourth patterns (with stress falling on the second syllable). The high and low success rates may simply have resulted from elements of guessing in combination with genuine knowledge of how certain words are pronounced. Unfortunately, it must be recognized that the demographic questionnaire failed to address the question of whether or not the speakers know the target words, it is therefore suggested that further steps be made in the form of follow-up interviews, for example, to determine whether the speakers know the target words. Erroneous cases of the first syllable placement were interesting because it is not a characteristic of Thai. This could be an indicator of an overgeneralization of their observation that high-frequency words in English tend to carry the primary stress on the first syllable (see the literature review section in Chapter 2). If this is truly the case, this error is not necessarily a negative as it shows that the students analyze their input, generate a rule, and apply it, thus a case of interlanguage development. However, this observation must be taken as anecdotal at best because of the small corpus in this study.

Despite the limitation of the questionnaire recognized above, that the participants favored the first syllable and strongly disfavored the second syllable requires some explanation. While it is possible that the speakers simply guessed, it is also possible that the speakers’ guessing was also rule-governed. If that was the case, such rule must have favored the first syllable and operated in a somewhat context-dependent manner. That is, while the rule was predominantly applied in di-syllabic environments, its use in tri-syllabic environments dropped dramatically.

*Stress on the third syllable.* While the cases for stress on the first and second syllables have been extensively discussed above, cases for stress on the third syllable (which are cases of wrong placement) should also be noted here. Recall that none of the target words carries stress on the third syllable, but the production results in Table 4.2 showed that stress-on-the-third-syllable cases were relatively common with 439 out of 1,740 tri-syllabic tokens, or 25.23% of the entire corpus.

In addition to the observations above, results and discussions regarding individual word groups are provided below.

**Table 4.3** Participants' pronunciation of disyllabic words in the first word group

Pronunciation patterns	In context		In isolation	
	tokens (435)	%	tokens (435)	%
<i>1st syllable</i>	<b>352</b>	<b>80.92</b>	<b>390</b>	<b>89.66</b>
2nd syllable	69	15.86	41	9.43
both syllables	9	2.07	1	0.23
add 1 more syllable	0	0	1	0.23
delete 1 syllable	0	0	0	0
incomprehensible	5	1.15	2	0.46

For the disyllabic words with the first stress pattern—the stress on the first syllable, most participants placed the stress on the correct syllables for both in context (80.92%) and in isolation (89.66%). According to Table 4.3, the participants better pronounced the words in isolation than the ones in context. Some of the words (15.86% in context and 9.43% in isolation) were stressed on the second syllables. A few words (2.07% in context and 0.23% in isolation) were stressed on both syllables. Only one word was pronounced with one extra syllable by one participant. Few words (1.15% in context and 0.46% in isolation) were mispronounced in terms of segmentals.



**Table 4.4** Participants' pronunciation of disyllabic words in the second word group

pronunciation patterns	in context		in isolation	
	tokens (435)	%	tokens (435)	%
1st syllable	220	50.57	202	46.44
<b>2nd syllable</b>	<b>171</b>	<b>39.31</b>	<b>202</b>	<b>46.44</b>
both syllables	10	2.30	3	0.69
add 1 more syllable	16	4	19	4.37
delete 1 syllable	0	0	0	0
incomprehensible	18	4.14	9	2.07

For the words of two syllables with the stress on the second syllable, 39.31% of the words in context were correctly stressed while almost half of the words in isolation (46.44%) were stressed on the correct syllables. Like the words in pattern one, their word stress performance in task two was relatively better than in task one. It should be noted that with a low average success rate of 42.88%, the participants showed a tendency to stress on the first syllable (50.57% in context and 46.44% in isolation).

**Table 4.5** Participants' pronunciation of tri-syllabic words in the third word group

pronunciation patterns	in context		in isolation	
	tokens (435)	%	tokens (435)	%
<i>1st syllable</i>	<b>199</b>	<b>45.75</b>	<b>215</b>	<b>49.43</b>
2nd syllable	70	16.09	93	21.38
3rd syllable	145	33.33	111	25.52
1st and 2nd syllables	0	0	0	0
2nd and 3rd syllables	1	0.23	0	0
1st and 3rd syllables	4	0.92	0	0
add 1 more syllable	1	0.23	0	0
delete 1 syllable	0	0	1	0.23
incomprehensible	15	3.45	15	3.45

The pronunciation of tri-syllabic words with stress on the first syllable was as follows. Nearly half of the tokens (45.75% in context and 49.43% in isolation) were correctly stressed. Several (16.09% in context and 21.38% in isolation) received the stress on the second syllables. One third of the words in context (33.33%) and one fourth of the words in isolation (25.52%) were stressed on the third syllables. Only one word was stressed on both the second and the third syllables by one participant. Few (0.92% in context) were stressed on both the first and the third syllables. One word in context was pronounced with one extra syllable by one participant while one word in isolation was pronounced with one syllable deleted by one participant. The rest (3.45% both in context and in isolation) were segmentally mispronounced.



**Table 4.6** Participants' pronunciation of tri-syllabic words in the fourth word group

pronunciation patterns	in context		in isolation	
	tokens (435)	%	tokens (435)	%
1st syllable	131	30.11	103	23.68
<b>2nd syllable</b>	<b>170</b>	<b>39.08</b>	<b>255</b>	<b>58.62</b>
3rd syllable	121	27.82	62	14.25
1st and 2nd syllables	0	0	1	0.23
2nd and 3rd syllables	0	0	0	0
1st and 3rd syllables	3	0.69	0	0
add 1 more syllable	0	0	0	0
delete 1 syllable	5	1.15	4	0.92
incomprehensible	5	1.15	10	2.30

For the fourth word group where the words of three syllables have stress on the second syllables, more than one third of the words in context (39.08%) were correctly stressed while more than half of the words in isolation (58.62%) were stressed on the right syllables. Nearly one third of the words (30.11% in context) and almost one fourth (23.68% in isolation) were stressed on the first syllables. More than one fourth (27.82% in context) and several (14.25% in isolation) were stressed on the third syllables. Only one word in isolation was stressed on both first and second syllables by one participant. Few words in context (0.96%) received stress on first and third syllables. Few (1.15% in context and 0.92% in isolation) were pronounced with one syllable deleted. Few (1.15% in context and 2.30% in isolation) were segmentally mispronounced.

In summary, although the students' performance passed a 50-percent mark, such performance could only be characterized as above average. In terms of errors, the most common type was stress shift which dominated all other errors in all word groups (thus all four stress patterns). However, it was observed that certain error types tended to cluster in one category. But because of the small list of target words, these errors

could have been attributed by particular target words which were more difficult than others. This note should therefore be observed in conjunction with the answer to the second research question below.

*(2) With which loanwords and which patterns do the students have problems most?*

This question essentially seeks to identify word groups and stress patterns most problematic to the speakers. To answer the question, the data were obtained from the set of scores and percentages of the problems on stress. Table 4.7 shows that the second word group appeared to be the most problematic to the students with the lowest success rate of 42.87 while the first word group ranked the highest in terms of success with a rate of 85.29.

**Table 4.7** Students' average success rates by word groups

Word group	Success rate
1	85.29
2	42.87
3	47.59
4	48.85

Regarding individual words most problematic to the students, all 60 words were ranked on a scale of seriousness of error based on the criteria described in Chapter 2. Table 4.8 exclusively shows relative degree of difficulty of words pronounced in sentences. Note that the percentage shown indicated a success rate which is presented in the reverse order of the degree of seriousness.



**Table 4.8** Students' success rates on the loanwords in sentences

G.	Words	%	Seriousness	G.	Words	%	Seriousness
2	shellac	0.00	very high	3	caravan	51.72	moderate
4	commando	3.45	very high	3	dynamite	55.17	moderate
2	technique	3.45	very high	2	unseen	58.62	moderate
4	bacillus	10.34	very high	3	oxygen	58.62	moderate
3	hamburger	13.79	very high	1	racket	58.62	moderate
4	tornado	13.79	very high	2	salute	58.62	moderate
4	torpedo	13.79	very high	3	battery	62.07	moderate
3	microphone	17.24	very high	2	trombone	62.07	moderate
2	promote	17.24	very high	3	bakery	62.07	moderate
4	spaghetti	20.69	very high	3	Catholic	62.07	moderate
2	cocaine	20.69	very high	2	hotel	62.07	moderate
4	oasis	20.69	very high	1	soda	65.52	moderate
3	megahertz	24.14	very high	3	vitamin	65.52	moderate
2	cement	24.14	very high	1	virus	65.52	moderate
4	Olympic	27.59	very high	4	electron	72.41	low
2	offside	31.03	high	1	sexy	75.86	low
2	guitar	31.03	high	1	sponsor	75.86	low
4	transistor	34.48	high	1	tennis	79.31	low
3	nicotine	34.48	high	1	fashion	79.31	low
3	conference	37.93	high	1	taxi	79.31	low
2	cigar	44.83	high	1	function	79.31	low
3	marathon	44.83	high	2	cartoon	79.31	low
3	dinosaur	44.83	high	4	corruption	82.76	low
2	balloon	44.83	high	1	copy	86.21	low
4	recycle	48.28	high	4	gymnastics	86.21	low
4	computer	48.28	high	1	clinic	89.66	low
2	shampoo	51.72	moderate	1	toffee	93.10	low
4	romantic	51.72	moderate	1	party	93.10	low
3	calorie	51.72	moderate	1	plastic	96.55	low
4	discredit	51.72	moderate	1	coma	96.55	low

*G. = word group*

Table 4.8 shows the most problematic words to the students were *shellac*, *commando*, *technique*, *bacillus*, *hamburger*, *tornado*, *torpedo*, *microphone*, *promote*, *spaghetti*, *cocaine*, *oasis*, *megahertz*, *cement* and *Olympic*. This group included seven words in the fourth group, five words in the second, and three words in the third. The words with high degree of seriousness were *offside*, *guitar*, *transistor*, *nicotine*, *conference*, *cigar*, *marathon*, *dinosaur*, *balloon*, *recycle*, and *computer*. This group comprised four words in the third, four words in the second and three words in the fourth group. Note that none of these words belong to the first word group. But given that the students seemed to be biased toward marking stress on the first syllable to begin with, one cannot conclude with confidence that they knew how to pronounce words in the first group. Contrary to the overall picture in which disyllabic words were a little more difficult than tri-syllabic words as shown in Table 4.7, Table 4.8 suggests that among difficult words themselves tri-syllabic words are more difficult in terms of stress than their disyllabic counterparts. This could mean a few things. First, tri-syllabic words are one syllable longer. If the students did not know the target words and merely relied on guessing the stress pattern of those words, their chance of stressing on the correct syllable was reduced from 50 percent in disyllabic words to 33 percent in tri-syllabic words. Added to the problem could be that even if they knew the words as *Thai* loanwords orally, they may have not recognized their English orthographic forms. If this was the case, the students may have somehow used orthography to guide their pronunciation, which proved to be misleading in cases where incorrect re-syllabification occurred.

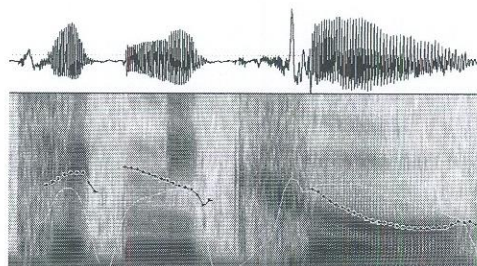


**Table 4.9** Errors in the most problematic words in sentences

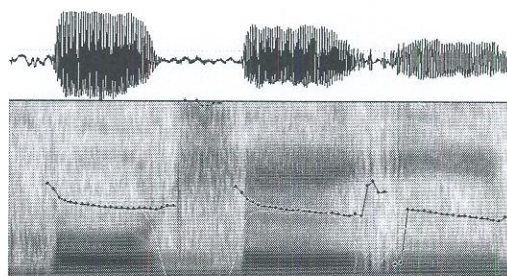
words	1st	2nd	3rd	> 1	add 1	delete 1	incomprehensible
shellac	29	0	0	0	0	0	0
commando	10	1	18	0	0	0	0
technique	14	1	0	2	9	0	3
bacillus	20	3	4	1	0	0	1
hamburger	4	14	10	0	0	0	1
tornado	7	4	17	1	0	0	0
torpedo	12	4	11	1	0	0	1
microphone	5	1	23	0	0	0	0
promote	23	5	0	1	0	0	0
spaghetti	13	6	9	0	0	0	1
cocaine	12	6	1	1	7	0	2
oasis	11	6	8	0	0	4	0
megahertz	7	7	14	1	0	0	0
cement	16	7	0	0	0	0	6
Olympic	20	8	1	0	0	0	0

Table 4.9 shows the error patterns among the words in sentences which were deemed most problematic to the students. The words the students tended to stress on the first syllables were *shellac*, *bacillus*, *promote*, *spaghetti*, *cocaine*, *oasis*, *cement*, and *Olympic*. The students were more likely to stress *hamburger* on the second syllable. The words *commando*, *tornado*, *microphone*, and *megahertz* were preferred to be stressed on the third syllables. Primary stress assignment on more than one syllables in one word was observed in *technique*, *bacillus*, *tornado*, *torpedo*, *promote*, *cocaine*, and *megahertz*. Added syllables were seen in *technique* and *cocaine* (See Figures 4.1 and 4.2). The word *oasis* was pronounced with one syllable deleted (See Figure 4.3). Errors in terms of segmental feature were made by the students in the words *technique*, *bacillus*, *hamburger*, *torpedo*, *spaghetti*, *cocaine*, and *cement*. For example, some students pronounced /'kement/, and /ke'ment/ for *cement*, /ba'kɪlʌs/

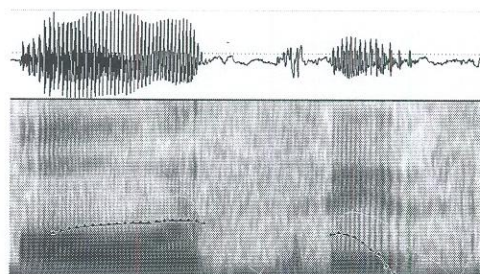
for *bacillus*, /<sup>h</sup>tʃɪga:/, /<sup>h</sup>kɪga:/, and /<sup>h</sup>saɪga:/ for *cigar*, /<sup>h</sup>dʌɪnʌmɪt/ for *dynamite*, /<sup>h</sup>nɪkɒtʌɪ/ and /<sup>h</sup>nʌɪkɒ<sup>h</sup>ti:n/ for *nicotine*.



**Figure 4.1** Spectrogram of *technique* pronounced by a participant



**Figure 4.2** Spectrogram of *cocaine* pronounced by a participant



**Figure 4.3** Spectrogram of *oasis* pronounced by a participant

Recall that the most common error type for the target words as a group was stress shift, but the analysis of highly difficult words in sentences showed an emerging pattern. That is, in addition to stress shift, stress-on-the-last-syllable was also relatively common. As the literature review has shown, stressing on the ultimate syllable is common in Thai. While the design of this study does not allow for a transfer-based explanation, it does show a pattern consistent with Thai.



**Table 4.10** Students' success rates on loanwords in isolation

G.	Words	%	Seriousness	G.	Words	%	Seriousness
2	technique	6.90	very high	3	bakery	68.97	moderate
4	bacillus	13.79	very high	4	transistor	68.97	moderate
3	hamburger	13.79	very high	1	virus	68.97	moderate
2	shellac	20.69	very high	3	battery	72.41	low
3	microphone	24.14	very high	2	unseen	72.41	low
2	cocaine	27.59	very high	2	balloon	75.86	low
4	commando	27.59	very high	3	oxygen	75.86	low
4	torpedo	27.59	very high	4	romantic	75.86	low
4	tornado	31.03	high	2	salute	75.86	low
3	caravan	34.48	high	1	soda	75.86	low
3	conference	34.48	high	2	cartoon	79.31	low
2	guitar	34.48	high	4	computer	79.31	low
3	nicotine	34.48	high	4	electron	79.31	low
4	oasis	34.48	high	1	tennis	79.31	low
2	cement	37.93	high	3	vitamin	79.31	low
2	cigar	37.93	high	1	taxi	82.76	low
3	megahertz	37.93	high	4	gymnastics	86.21	low
3	dynamite	41.38	high	1	racket	89.66	low
2	offside	41.38	high	1	sponsor	89.66	low
2	promote	41.38	high	1	toffee	89.66	low
2	hotel	44.83	high	1	copy	93.10	low
2	shampoo	48.28	high	1	plastic	93.10	low
4	spaghetti	48.28	high	4	recycle	93.10	low
3	Catholic	51.72	moderate	1	sexy	93.10	low
3	marathon	51.72	moderate	1	clinic	96.55	low
2	trombone	51.72	moderate	1	coma	96.55	low
3	dinosaur	55.17	moderate	4	corruption	96.55	low
4	Olympic	55.17	moderate	1	fashion	96.55	low
4	discredit	62.07	moderate	1	function	100.00	low
3	calorie	65.52	moderate	1	party	100.00	low

G. = word group

According to Table 4.10, the most problematic words in isolation were *technique*, *bacillus*, *hamburger*, *shellac*, *microphone*, *cocaine*, *commando*, and *torpedo*. This group of words contained three words with the fourth group, three words in the second group, and two words in the third group. The words with high degree of difficulty were *tornado*, *caravan*, *conference*, *guitar*, *nicotine*, *oasis*, *cement*, *cigar*, *megahertz*, *dynamite*, *offside*, *promote*, *hotel*, *shampoo*, and *spaghetti*. This group consisted of seven words in the second group, five words in the third group, and three words in the fourth group.

**Table 4.11** Errors in the most problematic words in isolation

words	1st	2nd	3rd	> 1	add 1	delete 1	incomprehensible
technique	17	2	0	0	8	0	2
bacillus	17	4	6	0	0	0	2
hamburger	4	20	5	0	0	0	0
shellac	23	6	0	0	0	0	0
microphone	7	3	19	0	0	0	0
cocaine	10	8	0	0	9	0	2
commando	10	8	10	0	0	0	1
torpedo	12	8	9	0	0	0	0

According to Table 4.11, *technique*, *bacillus*, *shellac*, *cocaine*, and *torpedo* were stressed on the first syllables by most of the students. Most of the students stressed *hamburger* on the second syllable. The words *microphone* and *commando* were preferred to be stressed on the third syllables. Extra syllable addition was found in *technique* and *cocaine*. Segmental errors were made in *technique*, *bacillus*, *cocaine*, and *commando*. In sum, the errors in the words in isolation were relatively similar to the ones in sentences, but less frequent.

The results also indicated that most words which were deemed highly difficult in isolation were still highly difficult in context. However, their difficulty rankings shifted to some degree. Interestingly, some of these words, such as *microphone*, *technique*, and *hamburger* are relatively common in daily life. This shows that familiarity can be false friends when it comes to pronunciation in the target



language. In other words, these words, when used in Thai, receive a different stress placement than when they are used in English. In Thai while *microphone* and *hamburger* are stressed on the last syllable, *technique* is stressed on the first. This difference may have confused the speakers as to which syllable should receive primary stress when pronounced as English words.

(3) *Are there any relationships between the production of the words in isolation and the words in sentences?*

One dimension of performance difference reported here was the speakers' degree of correct stress placement for words in isolation and in context. Table 4.12 shows a distribution of the students' mean scores across the two tasks. Recall that for each task, the students can score a maximum of 15 points for each task (thus 30 points for both tasks combined). The information on this table elaborates on the results discussed in Table 4.7 shown earlier.

**Table 4.12** Mean and standard deviation scores across tasks

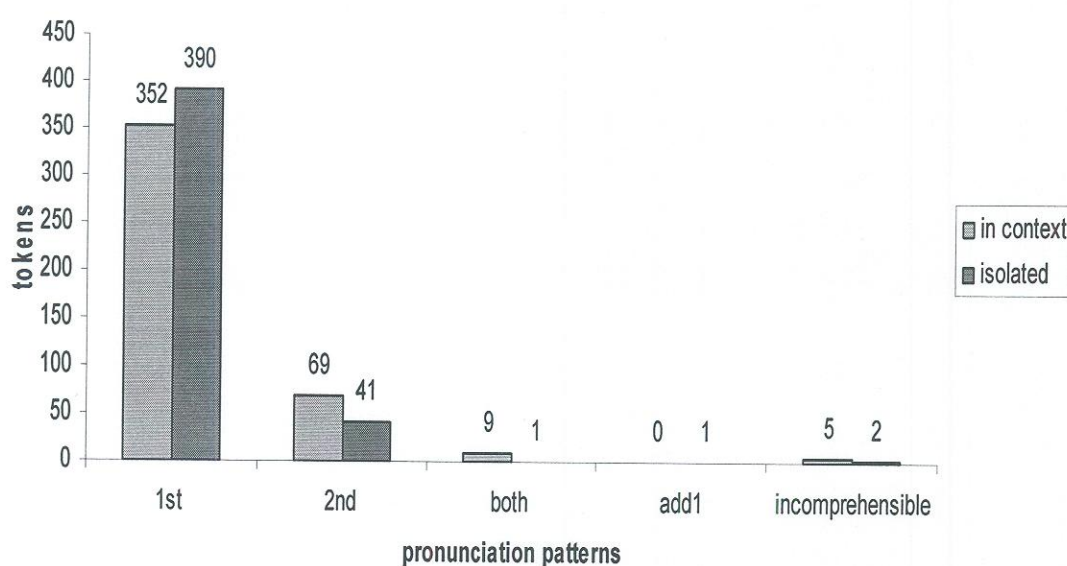
Tasks	Group 1		Group 2		Group 3		Group 4	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
In context	12.14	2.74	5.90	1.88	6.86	3.46	5.86	2.12
In isolation	13.45	1.99	6.97	2.93	7.41	2.85	8.79	2.46
Total	<b>25.59</b>	4.26	<b>12.86</b>	4.06	<b>14.28</b>	5.53	<b>14.66</b>	4.09

The average success rate for words in isolation was 36.62, while that for words in context was 30.76. The standard deviation for words in isolation was 5.08, while that for words in context was 6.85. A Pearson's correlation coefficient between the two tasks was 0.69 at a significant level of 0.01. This is the indicator that there was a positive relationship between the two tasks. The results showed the students who performed well on task one also did well on task two. A one-way repeated measure ANOVA was conducted on the speakers' success rates with the task conditions as within-subject factors. The ANOVA revealed a significant difference in success rates between both tasks  $F(1, 59) = 34.65, p = 0.0001$ . This result suggests that the speakers had more trouble placing stress in the word-in-context than the word-in-isolation task.

For this reason, further analysis on the nature of stress placement was examined and described below.

With respect to characteristics of pronunciation patterns across task conditions, observations regarding their similarities and differences are as offered below.

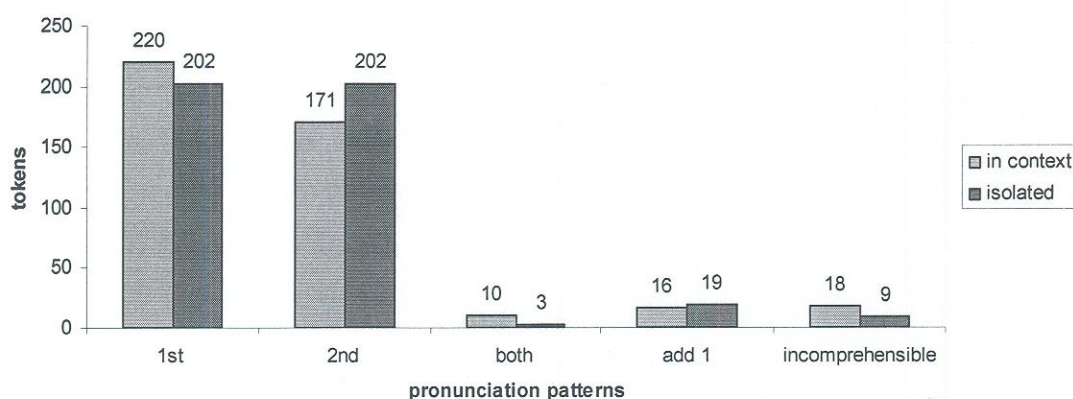
As for the first word group—disyllabic words with the stress on the first syllable, it was found that the speakers favored the first syllable in both conditions, although their degree of preference for such syllable was higher in the word-in-isolation task. In terms of errors, their stress placement on the second syllable is the most frequent in both tasks, but they had a tendency to do so more in the word-in-context task than in the word-in-isolation task. Also observed was the speakers' stress on both syllables, which was predominantly in the word-in-context task. Addition of one more syllable to the target word showed only one occurrence in the word-in-context task. Incomprehensible cases followed the same pattern. That is, they were more common in word-in-context than word-in-isolation task. In summary, although types of errors are relatively similar across both tasks, they were more frequent in the word-in-context than the word-in-isolation task. Figure 4.4 shows the pronunciation of disyllabic words with the stress pattern 1.



**Figure 4.4** Pronunciation of disyllabic words in the first group (stress pattern 1)

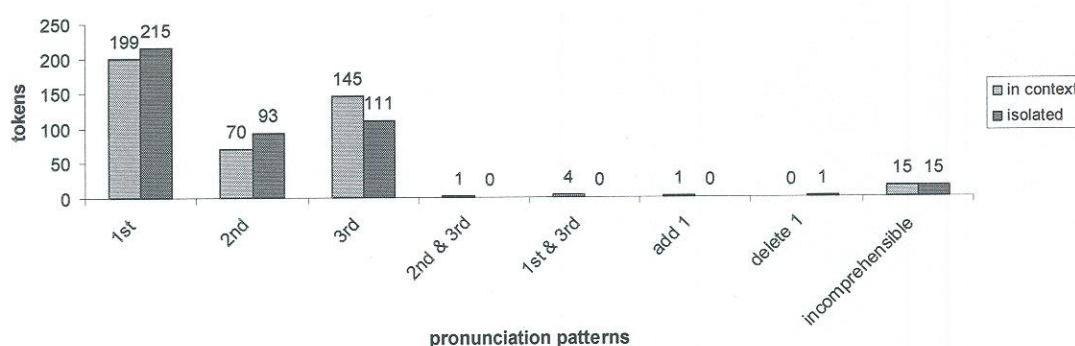


For disyllabic words with the stress on the second syllable, the students still tended to mark primary stress on the first, especially for words in context. The number of tokens in isolation pronounced with the first and the second syllable is the exact same (202 tokens). Some tokens of the words were stressed on both syllables while some segmental errors were also made. In a similar fashion, they were more frequent in sentences than in isolation. However, addition of one more syllable to some target words was found more in word-in-isolation task than the words in context. Figure 4.5 illustrates the pronunciation of disyllabic words with the stress pattern 2.



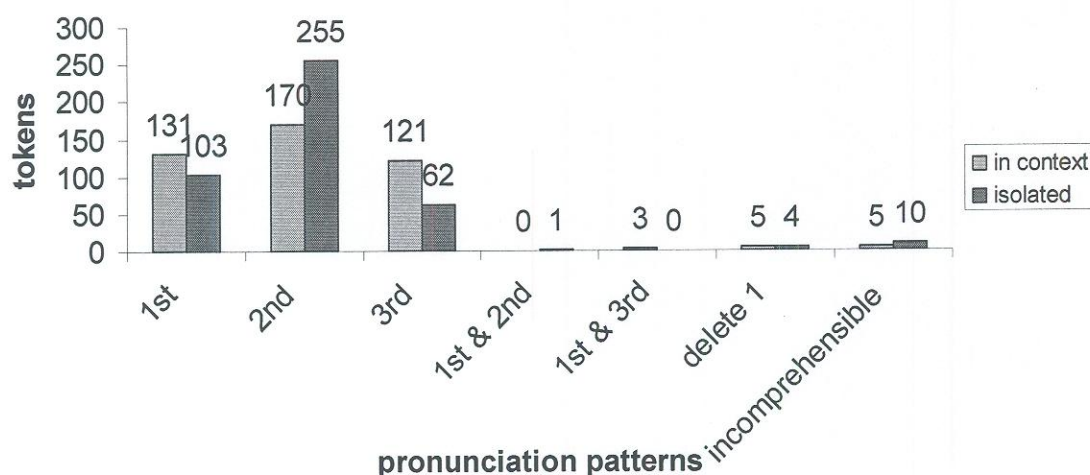
**Figure 4.5** Pronunciation of disyllabic words in the second group (stress pattern 2)

As for tri-syllabic words with the stress on the first syllable—stress pattern 3, almost half of the tokens were stressed on the correct syllables in both tasks. Similar to previous patterns, the performance on words in isolation was slightly better than that for words in context. Errors like stress on the third syllables were seen more than stress on the second syllables. The stress on the third syllables was more frequent in words in context. The opposite is true of stress on the second syllables. Cases of multisyllabic stress were found only in the words in context. Only one token in isolation was pronounced with one syllable deleted. Segmental errors in this group of words were the same in terms of frequency in both tasks. Figure 4.6 depicts the pronunciation patterns of tri-syllabic words in the third word group.



**Figure 4.6** Pronunciation of trisyllabic words in the third group (stress pattern 3)

In tri-syllabic words with the stress pattern 4—stress on the second syllable, more than half in the words in isolation were stress on the correct syllables which was better than words in context. The stress on the first syllables was more frequent in the word-in-context than in the word-in-isolation task. The same is true for cases of stress on the third syllable. Only one case of stress on the first and the second syllables occurred in the words in context, not in the words in sentences. The number of tokens pronounced with one syllable omitted was about the same in both tasks, while segmental mistakes were seen more in the word-in-isolation than the word-in-context task. Figure 4.7 displays the pronunciation of the words in the fourth group.



**Figure 4.7** Pronunciation of trisyllabic words in the fourth group (stress pattern 4)



That the students had more difficulty stressing words in context than in isolation could have come from the context itself. That is, the reading task was designed in such a fashion that each word was embedded in a unique sentential contexts. Adding to the fact that the students did not need to process additional information in their word-in-isolation task while they had to process more information in the word-in-context task, the students had to also face with individual pieces of information in the context-based task. Those pieces of information, be they syllabic, segmental, or semantic, may have caused a considerable amount of processing load and fatigue. As a result, the students did not perform as well as the word-in-isolation task.

#### *Additional observations*

The information obtained through the questionnaire revealed that students had about the same English background. That is, they neither did they have experience abroad nor did they attend an English immersion/bilingual program. All of them attended local ordinary high schools. All the participants regarded word stress an important aspect of pronunciation and oral communication. Most of them tried to use English outside the class. For example, they chatted through *Skype* (an Internet-based telephone system) and other channels with their English-speaking friends and they tried to watch English in its original language version. They also listened to English songs to practice pronunciation. When they were not sure about word stress placement in new words, they asked native speakers and/or consult dictionaries both conventional dictionaries and online ones. This is an indicator that all of the participants in the present study were motivated and attentive to improve their pronunciation and speaking skills.

## CHAPTER 5

### CONCLUSION

#### 5.1 Conclusion

The purpose of the study was to investigate a) how Thai university English majors assign primary stress in English loanwords of two and three syllables, b) the English loanwords and stress patterns most problematic to the learners, and c) the relationships between the production of the words in isolation and the words in sentences.

The results revealed that the students showed a strong tendency to stress the first syllables of disyllabic words. Therefore, the students made more mistakes in terms of stress placement in the words with disyllabic words where the correct stressed syllables fall on the second syllables. As for the tri-syllabic words with the stress pattern 3—the stress on the first syllables, the participants stressed the first syllables which was correct. However, a number of students stressed on the third syllables and the second syllables, which was incorrect. When it comes to tri-syllabic words with stress on the second syllables, the majority of the students stressed on the correct syllables especially in the words in isolation. The errors the participants made in this pattern included the stress on the first and the third syllables respectively. Additional errors found in this study were stress on more than one syllable, syllable omission, syllable addition, and segmental mistakes.

The words in context that were the most problematic to the students were *shellac*, *commando*, *technique*, *bacillus*, *hamburger*, *tornado*, *torpedo*, *microphone*, *promote*, *spaghetti*, *cocaine*, *oasis*, *megahertz*, *cement* and *Olympic*. The words in isolation which were the most problematic to the participants included *technique*, *bacillus*, *hamburger*, *shellac*, *microphone*, *cocaine*, *commando*, and *torpedo*. When it comes to the stress patterns, disyllabic words where primary stress falls on the second syllables were the most difficult to the students.



The results revealed a positive relationship between the stress production in the word-in-context task and the word-in-isolation task. That is, those who performed well in the first task tended to perform well also in the second task. The results also showed the word-in-context task was significantly difficult than the word-in-isolation task.

In conclusion, the students delivered their stress production at an above average level, passing at the average success rate of 56.15 percent. This is not a good indicator given the fact that they are English majors at the undergraduate level and with a good amount of self-reported practice in English. A close look at their errors shows an overwhelming preference for the first syllable in disyllabic words, which is not a characteristic of Thai and may reflect interlanguage development rather than L1 transfer. Another important observation is the students' tendency to stress on the last syllable in trisyllabic words, which only happens in erroneous cases. This could have been a result of L1 transfer as discussed earlier.

## **5.2 Limitations of the Study**

In addition to those limitations discussed earlier along with the discussion of results, the following are mentioned below.

First, the word stress production tasks in the study were read-aloud to investigate the tendency of which syllables the participants acoustically marked primary stress. It is a highly controlled task. The production gains do not reflect with the speakers might produce in natural speech.

Second, the results of this study must be taken as representatives of the students under investigation; they may not be generalizeable to other participant groups. Due to some problems with the design, several observations must also be taken as anecdotal.

Third, not all the target loanwords are familiar to the participants. They were purposively to match the syllable structures under investigation. Extraneous factors such as knowledge (or lack of it) of the target words and the students' degree of familiarity with the words in Thai cannot be ignored.

### 5.3 Recommendations for Further Studies

Recommendations for further studies are as follows:

(1) Despite a challenge in feasibility, further studies should see to observe or even elicit natural speech in order to compare the patterns of stress found with the ones observed in this study.

(2) Future studies may further conduct a follow-up investigation on transfer and developmental issues discussed in this research. In doing so, they need to be designed in such a way to prove transfer and/or interlanguage development.

(3) Based on this study's limitation in the word-in-sentence task, further studies may seek to investigate target words embedded in the same carrier sentence to ensure that the participants are not affected by the different degrees of difficulty of the contexts themselves.

### 5.4 Implementations of the study

The results of the study revealed some information about the students' word stress production skill which may be useful to English pronunciation teachers. Activities or materials to help students improve their skills in word stress production should be based on the learners' needs. The results of this study could be served pre-course diagnostic assessment (Celce-Murcia, Brinton & Goodwin, 1996; Goodwin, Brinton & Celce-Murcia, 1994), and it will be used indeed in the English phonetics course at the Faculty of Liberal Arts, Ubon Ratchathani University. As demonstrated in this study, simple acoustic phonetic software like Praat can help teachers analyze acoustic signals of students' speech production by displaying suprasegmental features including stress and intonation (Chun, 2007; Ladefoged, 2003; Molholt, 1992). This makes it possible to provide visual feedback both from teachers and their peers (Chun, 2002). Also, students can monitor their speech production and assess their own progress by themselves (Derwing, 2008). Unstressed syllables should also be introduced and pointed out in class in order that learners can perceptually and productively differentiate stressed and unstressed syllables (Underhill, 2005; Wenxia, 2003). In reality, we English teachers cannot teach all the words with their stress patterns. Some rules or guidelines or even some observations to generalize stress patterns can be helpful for learners (Burzio, 1994; Hewings, 1993b;



Poedjosoedarmo, 2003; Prator, 1971; Kreidler, 1989, 1997, 2004; Wennerstrom, 2001; Warotamasikkkhadit, 2002). Specifically, those observations regarding the students' common error patterns discussed in this study can be used to help pronunciation teachers tackle specific problems. The results of this study may also be used to remind teachers of English that suprasegmental pronunciation even among words which should be familiar to the students is not necessarily an easy task which can be taken for granted.

## REFERENCES



## REFERENCES

- Anani, M. (1989). "Incorrect Stress Placement in the Case of Arab Learners of English", IRAL, 27(1): 15-22.
- Archibald, J. (1998). Second Language Phonology. Amsterdam: John Benjamins.
- \_\_\_\_\_. (2000). "The Acquisition of Stress", in Charles W. Kreidler (ed.), Phonology. London: Routledge.
- Ashby, M. and Maidment, J. (2005). Introducing Phonetics Science. New York: Cambridge University Press.
- Ashby, P. (2005). Speech Sounds. 2<sup>nd</sup> ed. London: Routledge.
- Aungcharoen, N. (2006). An Investigation of the English Word Stress Perception and Production Skills of Thai 12<sup>th</sup> -Grade Students. Master's thesis: Srinakharinwirot University.
- Avery, P. and Ehrlich, S. (1992). Teaching American English Pronunciation. New York: Oxford University Press.
- Bake, A. and Goldstein, S. (1990a). Pronunciation Pairs (Student's Book). New York: Cambridge University Press.
- \_\_\_\_\_. (1990b). Pronunciation Pairs (Teacher's Book). New York: Cambridge University Press.
- Ball, M. J. and Rahilly, J. (1999). Phonetics: The Science of Speech. London: Arnold.
- Bourjan, T. (2003). Problems on Stress in English Pronunciation of Mathayomsuksa 6 Students. Master's independent study: Mahasarakham University.
- Brown, A. (1991). "Functional Load and the Teaching of Pronunciation", in A. Brown (ed.), Teaching English Pronunciation: A Book of Readings. London: Routledge.
- \_\_\_\_\_. (2005). Sounds, Symbols and Spellings. Singapore: McGraw-Hill Education (Asia).
- Brown, H. D. (2000). Principles of Language Learning and Teaching. 4<sup>th</sup> ed. London: Longman.
- Burzio, L. (1994). Principles of English Stress. Cambridge: Cambridge University Press.

## REFERENCES (CONTINUED)

- Celce-Murcia, M., Brinton, D. and Goodwin, J. (1996). Teaching Pronunciation: A Reference for Teachers of English to Speakers of Other Languages. New York: Cambridge University Press.
- Chomphuboot, S. (2005). The Development of Computer-Assisted Language Learning Materials for Practicing Word Stress and Intonation in English for Second-Year-English Majors. Master's thesis: Silpakorn University. In Thai.
- Chuleethongrerk, S. (2006). Primary Stress Variation of English Disyllabic Words by Thai Undergraduate Students. Master's research paper: Thammasat University.
- Chun, D. M. (2002). Discourse Intonation in L2: From Theory and Research to Practice. Philadelphia, PA, USA: John Benjamin Publishing Company.
- \_\_\_\_\_. (2007). "Technology Advances in Researching and Teaching Phonology", in Martha C. Pennington (ed.), Phonology in Context. New York: Palgrave Macmillan.
- Cynthia G. C. (2002). "Frequency of Stress Patterns in English: A Computational Analysis", Indiana University Linguistics Club Working Paper Online, 2. <http://www.indiana.edu/iulcwp>. October 19, 2008.
- Cruttenden, A. (2001). Gimson's Pronunciation of English. 6<sup>th</sup> ed. London: Arnold.
- Dauer, R. M. (1993). Accurate English. Englewood Cliffs, New Jersey: Prentice Hall Regents.
- Derwing, T. M (2008). "Curriculum Issues in Teaching Pronunciation", in J. G. Hansen Edwards and M. L. Zampini (eds.), Phonology and Second Language Acquisition. Philadelphia: John Benjamins.
- Derwing, T. M., Munro, M. J., and Wiebe, G. E. (1998). "Evidence in Favor of a Broad Framework for Pronunciation Instruction", Language Learning. 48: 393-410.
- Dickerson, W. B. (1977). "Review work(s): Drills in English Stress-Patterns by Lionel Guierre", TESOL Quarterly. 11(1): 97-403.
- \_\_\_\_\_. (1987). "Orthography as a Pronunciation Resource", World Englishes. 6: 11-20.



## REFERENCES (CONTINUED)

- \_\_\_\_\_. (1992). "Orthography: A Window on the World of Sound", in A. Brown (ed.), Approaches to Pronunciation Teaching. China: Macmillan Publishers Limited.
- \_\_\_\_\_. (1994). "Empowering Students with Predictive Skills", in Joan Morley (ed.), Pronunciation Pedagogy and Theory: New Views, New Directions. Alexandria, VA: TESOL
- Dickerson, W. B. and Finney, R. H. (1978). "Stress Cues to Vowel Quality", TESOL Quarterly. 12(2): 163-175.
- Francis, K. (1989). An Introduction to Phonology. London: Longman.
- Fredrickson, T. L. (1993). Speak English Clearly: British and American Pronunciation for Thai Speakers of English. Bangkok: Post Books.
- Gandour, J. (1979). "Tonal rules for English loanwords in Thai", in T.L. Thongkum, P. Kullavanijaya, P.V. Panupong and K. Tingsabadh (eds.), Studies in Tai and Mon-Khmer Phonetics and Phonology in Honour of Eugenie J. A. Henderson. Bangkok: Chulalongkorn University Press.
- Gandour, J., Potisuk, S., Harper, M. P. (1996). "Effects of Stress on Vowel Length in Thai", Pan-Asiatic Linguistics, Proceedings of the Fourth International Symposium. 1: 95-103.
- Gilbert, J. B. (1993). Clear speech: Pronunciation and Listening Comprehension in North American English. New York: Cambridge University Press.
- \_\_\_\_\_. (1994). "Intonation: A Navigation Guide for the Listener (and Gadgets to Help Teach It)", in Joan Morley (ed.), Pronunciation Pedagogy and Theory: New Views, New Directions. Alexandria, VA: TESOL
- \_\_\_\_\_. (2000). Clear speech from the Start. New York: Cambridge University Press.
- Goodwin, J., Brinton, D., and Celce-Murcia, M. (1994). "Pronunciation Assessment in the ESL/EFL Curriculum", in Joan Morley (ed.), Pronunciation Pedagogy and Theory: New Views, New Directions. Alexandria, VA: TESOL
- Hahn, L. D. (2004). "Primary stress and intelligibility: Research to Motivate the Teaching of Suprasegmentals", TESOL Quarterly. 38: 201-223.

## REFERENCES (CONTINUED)

- Hahner, J. C., Sokoloff, M., and Salisch, S. (2002). Speaking Clearly: Improving Voice and Diction. 5<sup>th</sup>ed. New York: McGraw Hill.
- Hancock, M. (1998). Pronunciation Games. New York: Cambridge University Press.
- \_\_\_\_\_. (2003). English Pronunciation in Use: Self-study and Classroom Use. Cambridge: Cambridge University Press.
- Hewings, M. (1993a). Pronunciation Tasks (Student's Book). Cambridge: Cambridge University Press.
- \_\_\_\_\_. (1993b). Pronunciation Tasks (Teacher's Book). Cambridge: Cambridge University Press.
- Hewings, M. and Goldstein, S. (1999a). Pronunciation Plus: Practice through Interaction (Student's Book). Cambridge: Cambridge University Press.
- \_\_\_\_\_. (1999b). Pronunciation Plus: Practice through Interaction (Teacher's Book). Cambridge: Cambridge University Press.
- Jarusan, P. (1997). Perception and production of English word stress of first year students at Rangsit University. Master's thesis: Chulalongkorn University. In Thai.
- Jenkins, J. (2000). The Phonology of English as an International Language New Models, New Norms, New Goals. New York: Oxford University Press.
- Kanoksilapatham, B. (1992). An Analysis of English Pronunciation of Third-Year-English Majors. Research Paper: Silpakorn University. In Thai.
- Kelly, G. (2000). How to Teach Pronunciation. Essex: Longman.
- Kenstowicz M. and Suchato A. (2006). "Issues in Loanword Adaptation: A Case Study from Thai", Lingua, 116, 921-949.
- Kent, R. D. and Read, C. (1992). The Acoustic Analysis of Speech. UK: Singular Publishing Ltd.
- Kreidler, C. W. (1989). The Pronunciation of English: A Course Book in Phonology. New York: Basil Blackwell.
- \_\_\_\_\_. (1997). Describing Spoken English: An Introduction. New York: Routledge.



## REFERENCES (CONTINUED)

- \_\_\_\_\_. (2004). The Pronunciation of English: A Course Book. 2<sup>nd</sup> ed. UK: Blackwell Publishing.
- Ladefoged, P. (2001). A Course in Phonetics. 4<sup>th</sup> ed. Florida: Harcourt College Publishers.
- \_\_\_\_\_. (2003). Phonetic Data Analysis: An Introduction to Fieldwork and Instrumental Techniques. UK: Blackwell Publishing.
- Lane, L. (1997). Basics in Pronunciation: Intermediate Practice for Clear Communication. New York: Longman.
- Mees, I. M. and Collins, B. (2006). Practical Phonetics and Phonology. London: Routledge.
- \_\_\_\_\_. (2008). Practical Phonetics and Phonology. 2<sup>nd</sup> ed. London: Routledge.
- Miller, S. F. (2006). Targeting Pronunciation: Communicating Clearly in English. 2<sup>nd</sup> ed. Boston: Houghton Mifflin Company.
- Molholt, G. (1992). "Visual Displays Develop Awareness of Intelligible Pronunciation Patterns", in Adam Brown (ed.), Approaches to Pronunciation Teaching. China: Macmillan Publishers Limited.
- Morley, J. (1979). Improving Spoken English. Ann Arbor: University of Michigan Press.
- Morley, J., ed. (1994). Pronunciation pedagogy and theory: New views, new directions. Alexandria, VA: TESOL.
- Nacaskul, K. (1979). "A Note on English Loanwords in Thai", in Theraphan L. Thongkum, Pranee Kullavanijaya, Vichin Panupong and M.R. Kalaya Tingsabadh (eds.), Studies in Tai and Mon-Khmer Phonetics and Phonology in Honour of Eugenie J.A. Henderson, 151-162. Bangkok: Chulalongkorn University Press.
- Nathong, W. (2001). Contrastive Analysis of English and Thai. Bangkok: Ramkhamhang University Press. In Thai.
- Netsawang, U. (1999). A Study of Listening Problems among Thais and Japanese Employees in Japanese Trading Company. Master's thesis: Ramkhamhang University.

## REFERENCES (CONTINUED)

- Okobi, A. O. (2006). Acoustic Correlates of Word Stress in American English.  
Doctor's thesis: The Massachusetts Institute of Technology.
- Panlay, S. (1997). The Effect of English Loanwords on the Pronunciation of Thai.  
Master's thesis: Michigan State University.
- Pennington, M. C. (1996). Phonology in English Language Teaching: An International Approach. London: Longman.
- Peyasantiwong, P. (1986). "Stress in Thai", in Bickner Robert J., Hudak Thomas J.,  
Peyasantiwong Patcharin (eds.), Papers from a Conference on Thai Studies  
in Honor of William J. Gedney, 211-230. Bangkok: Chulalongkorn  
University Press.
- Poedjosoedarmo, G. (2003). Teaching Pronunciation: Why, What, When and How.  
Singapore: SEAMEO Regional Language Centre.
- Prator, C. H. (1971). "Phonetics vs. Phonemics in the ESL Classroom: When Is  
Allophonic Accuracy Important?" TESOL Quarterly. 5(1): 61-72.
- Roach, P. (2000). English Phonetics and Phonology. 3<sup>rd</sup> ed. Cambridge: Cambridge  
University Press.
- \_\_\_\_\_. (2001). Phonetics. New York: Oxford University Press.
- Saknukulpaisan, B. (2003). A Study of Thai Non-Native Speakers' Use of Flawed  
Stress and Unstress Patterns in at the Lexical Level. Master's thesis: The  
University of the Thai Chamber of Commerce.
- Sasi-Smit, M. (2005). A Study of the Effect of Omission of English Word Stress on  
Comprehensibility: A Case Study of Thai Staff Using English in a Group of  
Company. Master's research paper: Thammasat University.
- Sluijter, A. (1995). Phonetic Correlates of Stress and Accent. The Hague: Holland  
Academic Graphics.
- Stress. (2009). In M. Mayor (Ed.), Longman Dictionary of Contemporary English  
(p. 1745, 5th ed.). China: Pearson Education Limited.
- Underhill, A. (2005). Sound Foundations: Learning and Teaching Pronunciation. UK:  
Macmillan.



## REFERENCES (CONTINUED)

- Vairojanavong, N. (1984). A Contrastive Study of the Accentual Systems in English and Thai and an Error Analysis of the Pronunciation of English Polysyllabic Medical Terms. Master's thesis: Chulalongkorn University. In Thai.
- Varasarin, P. (2007). An Action Research Study of Pronunciation Training, Language Learning Strategies and Speaking Confidence. Dissertation: Victoria University.
- Warotamasikkhadit, U. (1970). Introduction to Linguistics Language: Introduction to Linguistics. Ramkhamhang University Press. In Thai.
- \_\_\_\_\_. (1967). Introduction to Linguistics. Bangkok: Ramkhamhang University Press. In Thai.
- \_\_\_\_\_. (2002). Contemporary Linguistics. Bangkok: Ton Tham Press. In Thai.
- Wells, J. C. (2006). English Intonation: An Introduction. New York: Cambridge University Press.
- \_\_\_\_\_. (2008). Longman Pronunciation Dictionary. 3<sup>rd</sup> ed. China: Longman.
- Wennerstrom, A. K. (2001). Music of Everyday Speech: Prosody and Discourse Analysis. Cary, NC, USA: Oxford University Press.
- Wenxia, L. (2003). "Teaching Weak Forms", English Teaching Forum. 41(2): 32-35.
- Wong-Opasi, U. (1992). "The Interplay between Tone, Stress, and Syllabification in Thai", in M. Ratliff and E. Schiller (Eds.), Papers from the First Annual Meeting of the Southeast Asian Linguistics Society. 441-481. Arizona State University, Program for Southeast Asian Studies.

## **APPENDICES**



## **APPENDIX A**

### **Questionnaire**

**Background and Attitudes towards Pronunciation of English and  
Communication Majors at Ubon Ratchathani University**

Please answer the following questions by writing in the blanks and ticking the appropriate box(es).

1. Sex ☐ Male ☐ Female
2. Age .....years old
3. Primary school ☐ English program ☐ Ordinary program
4. Secondary school ☐ English program ☐ Ordinary program
5. How long have you been learning English?.....year(s)
6. Have you ever been overseas?  
☐ Yes. ☐ No. If your answer is "No", please skip to no. 8.
7. Which countries have you been to? What was your purpose and how long did you stay there?  
a. I have been to.....My purpose was ....., I have been there for .....month(s)/year(s).  
b. I have been to.....My purpose was ....., I have been there for .....month(s)/year(s).
8. How often do you speak English with foreigners?  
.....time(s) per ☐ Week  
☐ Other, please state.....  
For how long each time?.....hour(s)



9. How do you improve your English pronunciation?

- |                                                            |                                                           |
|------------------------------------------------------------|-----------------------------------------------------------|
| <input type="checkbox"/> Speak with other English teachers | <input type="checkbox"/> Speak with other students        |
| <input type="checkbox"/> Speak with native speakers        | <input type="checkbox"/> Watch English sound-track movies |
| <input type="checkbox"/> Listen to and sing English songs  | <input type="checkbox"/> Reading book aloud               |
| <input type="checkbox"/> Other, please state.....          |                                                           |

10. Do you think that word stress is important to your speaking for being understood?

- ☐ Yes.                      ☐ No.

11. Do you think that you have word stress problems?

- ☐ Yes.                      ☐ No.

12. What are yours strategies to stress syllables correctly?

.....

.....

.....

.....

.....

.....

.....

.....

.....

**Thank you very much for your time and cooperation.**

## **APPENDIX B**

### **List of Words in Sentences and in Isolation**



## Words in Sentences

**Instructions:** Read aloud each sentence only once.

1. A can of **soda** would be nice.
2. Cover the food in **plastic** wrap immediately.
3. Don't forget to recharge the **battery** after use.
4. Easy Listening FM 95.5 **megahertz** is my favorite station.
5. He doesn't need a **microphone** during the class.
6. He left his **cigar** on the table.
7. He runs a **marathon** because he enjoys it.
8. He used to play **trombone** with a jazz band.
9. He usually sneaks out **unseen** during the night.
10. He's on tour to **promote** his new movie.
11. Her husband joined a **commando** unit last month.
12. Humans need **oxygen** like other animals.
13. I bought a bottle of **shampoo** for you.
14. I don't think she is **sexy** in that dress.
15. I haven't used my **transistor** for a long time.
16. I love **spaghetti** with mushrooms.
17. I ordered a **hamburger** with cheese.
18. I think there is a **clinic** on the corner.
19. I usually take **vitamin** pills when I feel tired.
20. I'm not a **romantic** kind of guy.
21. It is a good idea to **recycle** waste material.
22. It is necessary to have **computer** skills for the job.
23. Kids might **copy** their friends easily.
24. My brother worked at a **bakery** last summer.
25. My friends play **tennis** every day in the evening.
26. My parents are **Catholic** like their parents.
27. My sister hid her **toffee** in the kitchen.
28. Nobody has seen a **dinosaur** in reality.
29. People can't stop smoking because of **nicotine** in cigarettes.
30. People cut **calorie** intake to lose weight.
31. People use lacto **bacillus** for yoghurt production.
32. Scarves are in **fashion** again this year.
33. She has been in a **coma** since the accident.
34. She has been practicing for the **Olympic** Games next year.
35. She is trying to learn a new **technique** without help.
36. She put her **racket** on the sofa.
37. She takes a **taxi** to work every day.
38. She wants to learn **gymnastics** at school.
39. That was just to **discredit** the Prime Minister.
40. The machines did not **function** properly yesterday.
41. The new **virus** is very dangerous.
42. The paint with the **shellac** can last longer.
43. The player was in an **offside** position.
44. The police arrested him selling **cocaine** to teenagers.
45. The powerful **tornado** destroyed all the houses in this area.

46. The students tied the balloons with rubber bands.
47. Their kids love to watch cartoons after school.
48. They formed a caravan of almost a thousand camels.
49. They have to stay in a hotel at the moment.
50. They sleep on the cement floor every night.
51. They stood in line to salute their commander.
52. This chapter explains electron energy in detail.
53. This is a peaceful oasis in the middle of desert.
54. Two people were hurt in a dynamite blast yesterday.
55. We are going to join a party tomorrow evening.
56. We have corruption problems in our country.
57. We have to attend a conference tomorrow afternoon.
58. We need more sponsors for the show.
59. We play the guitar together in the evening.
60. With the shape of torpedo, dolphins can swim very fast under water.



**Words in isolation**

**Instructions:** *Read aloud each word only once.*

- |                |                |
|----------------|----------------|
| 1. bacillus    | 31. microphone |
| 2. bakery      | 32. nicotine   |
| 3. balloon     | 33. oasis      |
| 4. battery     | 34. offside    |
| 5. calorie     | 35. Olympic    |
| 6. caravan     | 36. oxygen     |
| 7. cartoon     | 37. party      |
| 8. Catholic    | 38. plastic    |
| 9. cement      | 39. promote    |
| 10. cigar      | 40. racket     |
| 11. clinic     | 41. recycle    |
| 12. cocaine    | 42. romantic   |
| 13. coma       | 43. salute     |
| 14. commando   | 44. sexy       |
| 15. computer   | 45. shampoo    |
| 16. conference | 46. shellac    |
| 17. copy       | 47. soda       |
| 18. corruption | 48. spaghetti  |
| 19. dinosaur   | 49. sponsor    |
| 20. discredit  | 50. taxi       |
| 21. dynamite   | 51. technique  |
| 22. electron   | 52. tennis     |
| 23. fashion    | 53. toffee     |
| 24. function   | 54. tornado    |
| 25. guitar     | 55. torpedo    |
| 26. gymnastics | 56. transistor |
| 27. hamburger  | 57. trombone   |
| 28. hotel      | 58. unseen     |
| 29. marathon   | 59. virus      |
| 30. megahertz  | 60. vitamin    |