FOREIGN ACCENT MODIFICATION: ASSOCIATION AMONG WORD EMPHASIS AND RISK-TAKING FOR ADULT JAPANESE ENGLISH-LANGUAGE LEARNERS

A Dissertation by

Masako Maeda

Master of Education, Wichita State University, 2004

Bachelor of Arts, Wichita State University, 2008

Bachelor of Arts, Sophia University, Tokyo, Japan, 1977

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The following faculty members have examined the final copy of this dissertation for form and content, and recommend that it be accepted in partial fulfillment of the requirement for the degree of Doctor of Philosophy with a major in Communication Sciences and Disorders.

_____
Kathy Strattman, Committee Chair

_____
Anthony DiLollo, Committee Member

_____
Barbara Hodson, Committee Member

_____
Peggy Anderson, Committee Member

_____
Marlene Schommer-Aikins, Committee Member

Accepted for the College of Health Professions

_____
Peter, A. Cohen, Dean

Accepted for the Graduate School

_____
J. David McDonald, Dean

DEDICATION

To my husband, Takashi

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"Accomplish something during your stay overseas--something unique and not easily available in Japan, something that will allow you to „grow yourself as a much bigger person‟." So my now-deceased father advised me when I left Japan long time ago. Since that day, my quest for "something" began, and my "something" was found when I decided to challenge myself to pursue a PhD. And finally, my "something" was obtained. Looking back, it was a long haul, but I am truly thankful for a seed of ambition that my father planted in my soul and I was able to grow, which finally yielded a great harvest. My accomplishment is in honor of my parents, Masafumi and Katae Yokoyama.

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ABSTRACT

The purpose of this study was to investigate possible associations between the application of word emphasis and risk-taking behaviors of adult Japanese English-language learners (ELLs) in the scope of foreign accent modification. The investigation was conducted through comparing 30 adult Japanese ELLs‟ first readings of a scenario with 30 age- and gender-matched native American-English speakers (NESs), the ELLs‟ first readings and second readings with an instruction to apply emphasis, and the ELLs‟ scores for a risk-taking questionnaire. Acoustical data were gathered from the recorded readings of the speakers for vowel duration, fundamental frequency (F0), and intensity of the pre-determined target words in the scenario. A second measurement tool involved seven listeners‟ evaluations of comprehensibility and foreign accentedness for each recorded token and their identification of the emphasized words.

Results indicated that there were no significant differences in vowel duration, F0, and intensity of the pre-determined target words between the ELLs‟ and NESs‟ first readings. Although the Japanese ELLs made significant increases in the three acoustical elements on the target words after receiving instruction to apply emphasis in their second readings, the listeners‟ evaluations of comprehensibility and foreign accentedness did not correlate with the changes. Also, no correlation was found between changes the ELLs made and their scores on the risk-taking questionnaire. The findings may provide additional perspectives for foreign accent modification in addition to conventional methods. Overall outcomes may also be beneficial to help the increasing number of nonnative English speakers be more comprehensible and adaptable for American society.

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LIST OF ABBREVIATIONS/NOMINCLATURE

ANOVA	Analyses of Variance
ELL	English Language Learner
IPA	International Phonetic Alphabet
L1	Native Language
L2	Second Language (English in this study)
MANOVA	Multivariate Analysis of Variance
NES	Native English Speaker
NNES	Nonnative English Speaker
R1	The First Reading (general reading in this study)
R2	The Second Reading (reading with an instruction to apply emphasis in this study)
SLP	Speech-Language Pathologist
TESOL	Teachers of English to Speakers of Other Languages
US	The United States of America

LIST OF SYMBOLS

dB	Decibel
η^2	Eta squared
F0	Fundamental Frequency
Hz	Hertz
Λ	Lambda
ms	Millisecond

CHAPTER 1

INTRODUCTION

With the rapid advancement of technology and globalization, English is officially used as a world language today. In fact, English has become the main medium of communication between countries; it is the chief language of written documents and information stored electronically; and it is taught most widely as a second language[1] (L2), or a foreign language[2] in more than 100 countries (Crystal, 2002; 2003). Mydans (2007) indicated that English belongs to the world now, not to its native speakers any longer. As a matter of fact, approximately 16% of the world‟s populations of over 6.6 billion are nonnative English speakers (NNESs) according to Time Almanac 2008 (2007). More specifically, perhaps 400 million people speak English as their native language (L1), 300 to 500 million people as their L2, and 750 million as a foreign language (Mydans).

The United States (US), one of the countries where English is used as a mother tongue, is often referred to as "a salad bowl," suggesting different kinds of salad ingredients, namely race/ethnicities, languages, and cultures are all mixed, but not assimilated, in a big bowl called the US. The US has increasingly become diverse linguistically and culturally because of the growing number of incoming people with various purposes such as immigration, business, and learning English (Rong & Preissle, 2009); and is being transformed into a multicultural country. One such ingredient is people from Japan. It is reported there are 374,732 Japanese living in the US over 3 months and 126,961 permanent expatriates including those with dual nationality as of 2007 (Japan Statistical Yearbook, 2010). When Japanese college-level students, in particular, are concerned, there were around 33,974 in the US in 2007/08 academic year according to a report of the Institute of International Education (2009).

When people with the different language-backgrounds communicate in English, it is natural that they produce English influenced by their L1, which is generally referred to as foreign accented speech (Edwards & Strattman, 1996). If the linguistic systems of L1 and English are similar, positive transfer to English occurs (Scovel, 2001). Major (2001) called this transfer a "free ride" (p.3), because English language learners (ELLs) do not have to learn anything new in the linguistic levels. In contrast, if L1 and English linguistic systems are quite different, negative transfer or interference occurs, because it becomes a challenge for ELLs to learn some new linguistic elements, including phonology, morphology, lexicon, syntax, semantics, and discourse (Major; Scovel).

An accent itself is defined as a way an individual sounds when speaking; therefore, it may be claimed that everybody speaks with an accent (Cheng, 1999; Kumaravadivelu, 2004). Also, accentedness is a listener"s perception of how different a speaker"s accent is from that of the community (Derwing & Munro, 2005). Foreign accent is a beautiful way to show oneself, because it adds variety and uniqueness to speech. Leather (1983) claimed that accent is a "powerful symbol of ethnicity" (p. 199). Cheng also argued that foreign accent tells an individual"s culture and life story, suggesting that an accent should be respected and should not be taken away.

The problem, however, arises when the foreign accent causes social, educational, occupational, and professional problems because of the reduction in intelligibility[3] and comprehensibility[4] in communication. Moreover, a foreign accent may even raise the potential for discrimination and negative evaluation in society (Derwing & Munro, 2005; Munro & Derwing, 1995). Lippi-Green (1997) also suggested that accents are "stigmatized" and that "there is no hesitation to act on prejudice associated with language" (p. 235). The social

reactions toward foreign accented speech may cause ELLs some psychological difficulties as well. They may experience a communication breakdown, which leads to embarrassment, shame, anxiety, negative self-image, and even a loss of self-confidence (Brown, 1994).

Consequently, many ELLs seek professional help to reduce their accentedness. A misconception, however, is holding an achievement of native-speaker fluency as a goal. Such a goal is not realistic and is rarely achieved (Shibata & Hurtig, 2008). It is important to realize that the purpose of accent modification is not elimination of a foreign accent (Derwing & Munro, 2005; Leather, 1983). Rather, it is to develop an ELL's functional intelligibility and communicability, to increase self-confidence, and to obtain speech-monitoring abilities[5] (Morley, 1998).

Speech-language pathologists (SLPs) and teachers of English to speakers of other languages (TESOLs) are two of the major authorities for modifying foreign accent in general education. Although the term "foreign accent/modification" is generally used by SLPs, "pronunciation," "communicative improvement," and "improving English sounds" are often referred to by TESOLs (Sikorski, 2005; TESOL, 2009). Even though SLPs and TESOLs have different historical background, scope, and philosophy regarding oral communication, both began their work in the 1940s at the segmental level (i.e., the most basic level of sound: consonants and vowels, refer to Chapter II for details), pronunciation training with an explanation of articulatory positions (Sikorski). In the 1970s, however, a new perspective on functional intelligibility and communicability emerged. Accent modification started in the 1980s with a broader focus on communicative competencies emphasizing the suprasegmental level (i.e., over the segmental level such as stress, intonation, and overall rhythm; refer to Chapter II for details) which was viewed as including more influential factors (ASHA, 1983; Morley, 1991;

Schmidt, 1997; Strange, 1995). Findings of some researchers revealed that the rhythm and timing of an utterance created by stress serve as a signal to provide syntactic, semantic, and discourse information to listeners, who attend to the stressed syllables of words or intonation rather than unstressed syllables or monotone expression to determine reliable information (e.g., Anderson-Hsieh, Johnson, & Koehler, 1992; Bond, 1999; Derwing, Munro, & Wiebe, 1998; Edwards & Strattman, 1996; Field, 2005; Gilbert, 1984; Major, 2001; Morley, 1991; Riney, Takagi, & Inutsuka, 2005; Sikorski, 2005).

Successful L2 learning, including accent modification, is, of course, due not only to teaching strategies of verbal variables, but also to other factors such as personality, psychological aspects, learning styles, learning environment, age, and gender (Carrell, Prince, & Astika, 1996; Oxford & Ehrman, 1993). These nonverbal variables interact with each other or one another in a complex manner as each individual approaches L2 differently. When no two people are likely to construe or make sense of the world in the same way (Kelly, 1955; Maher, 1969), looking at ELLs as individual persons and investigating the internal factor of their personality characteristics is particularly important to an L2 study (Ehrman & Oxford, 1995; Naiman, Fröhlich, Stern, & Todesco, 1996).

Accent modification is more than changing the way NNESs sound; it is a more global aspect. As Beebe (1983) stated, "you take a risk every time you open your mouth in a foreign language" (p. 39); speaking L2 involves some ambiguities, risks, and unpredictable outcomes. Some researchers (e.g., Beebe; Brown, 1994; Ehrman & Oxford, 1995; Ely, 1986; Onwuegbuzie, Bailey, & Daley, 2002; Rubin, 1975) suggested that a degree of tolerance for ambiguity is essential to successful L2 learning. NNESs' risk-taking behavior in speaking L2, in particular, has been proposed to be an important contributor (Beebe; Brown; Ely). When NNESs wish to be

more comprehensible and intelligible in speaking English, their risk-taking behavior could be largely involved in changing their speaking patterns.

Statement of the Problem

Finding contributory factors for enhancing communicative competency has been a major interest and a challenge for researchers for more than 30 years. Many researchers thus far have concluded that the suprasegmental level plays a more significant role than the segmental level (e.g., Anderson-Hsieh, Johnson, & Koehler, 1992; Derwing, Munro, & Wiebe, 1998; Edwards & Strattman, 1996; Field, 2005; Gilbert, 1984; Morley, 1991; Riney, Takagi, & Inutsuka, 2005; Sikorski, 2005; Wong, 1993). Although there have been extensive and longitudinal studies on suprasegmental variables as well as the segmental variables, the focus has been placed on a discrete element to examine the impact on functional communicability. Some examples include investigations on vowels (e.g., Munro & Derwing, 2008), consonants (e.g., Bradlow, Akahane-Yamada, Pisoni, & Tohkura, 1999), stress (e.g., Field, 2005), and intonation (e.g., Wennerstrom, 2001).

Moreover, among some studies on nonverbal variables, the focus was again on an individual element such as risk-taking (e.g., Beebe, 1983), motivation (e.g., Gardner, Lalonde, & Moorcroft, 1985), and anxiety (e.g., Horwitz, Horwitz, & Cope, 1986). These studies on the nonverbal variables tend to examine their relations to overall proficiency in L2/English as a foreign language, or general communicative competency. None of them have specifically investigated the relations to accent modification.

Given some findings that suprasegmental levels play a major role and that personal traits of ELLs are important contributors, investigations on the triple relationships on the verbal,

nonverbal, and communicative competency are limited. Specifically, the application of word emphasis on speech and ELLs‟ risk-taking behaviors for the purpose of modifying foreign accent needs to be explored. In addition, there has been a paucity of research involving the use of both technology (i.e., computer program) and human ears as measurement tools.

This study focused exclusively on the role of risk-taking behaviors and the application of word emphasis under a larger scope of accent modification. This study will extend the knowledge of previous research on discrete elements concerning effective strategies to modify foreign accent. It also will show the separate role of computer and human ears as measuring tools. Moreover, overall results may be beneficial to modify foreign accent of the increasing number of NNESs, besides helping make the English production of Japanese ELLs more intelligible and adaptable to American society, by tailoring instruction strategies to their personalities.

Purpose of the Study

The purpose of the current study was to investigate the possible association between application of word emphasis and risk-taking behaviors of the Japanese ELLs. The investigation was conducted through answering the following questions: (a) does a difference exist in vowel duration, fundamental frequency (F0), and intensity of the pre-determined target words in general reading (R1) between Japanese ELLs and NESs; (b) does a difference exist in vowel duration, F0, and intensity of the pre-determined target words in R1 and reading with an instruction to apply emphasis (R2) for Japanese ELLs; (c) does a relationship exist between the listeners‟ ratings of comprehensibility and foreign accentedness and the Japanese ELLs‟ R1 and

R2; and (d) does a relationship exist between scores on risk-taking questionnaire and application of word emphasis for Japanese ELLs in this study.

CHAPTER II

LITERATURE REVIEW

This chapter begins with a brief general overview of research on variables identified to facilitate foreign accent modification. Segmental and suprasegmental aspects in verbal levels are discussed first, followed by a discussion of nonverbal levels. A linguistic comparison between Japanese and American English, and general cultural comparison between Japan and the US follow. Finally, more specified foci are placed on the use of word emphasis in utterances and what is known about risk-taking behavior.

Variables to Facilitate Foreign Accent Modification

Differences in Categorization of Variables

Scholars differ in categorizing the contributory variables of accent modification, including both verbal and nonverbal elements. The most common categorizations are the two verbal levels of segmental and suprasegmental (Couper-Kuhlen, 1986; Rosse, 1999). Another categorization includes the foci of segments, syllables, and prosody (Major, 2001). Crystal (1969) incorporated prosodic, paralinguistic, and non-linguistic elements in his non-segmental category as well as segmental categories. The nonverbal includes elements of overt and covert communication as well as psychological aspects. Morley (1992) also suggested two groupings, but in a different way: speech production (also referred to as "microfocus," p. xiii), which includes overall pronunciation; and speech performance (also referred to as "macrofocus," p. xiii), encompassing overall oral communication.

A broad overview of verbal and nonverbal elements, including general definitions, is necessary to consider the more specific aspects later in this chapter. Verbal elements, segmental and suprasegmental levels, have been studied more thoroughly than the nonverbal elements.

Defining the Segmental Level

Accent modification that focused on the segmental level refers to the phoneme level of consonants and vowels, which is the most basic level of sound (Garn-Nunn & Lynn, 2004). ELLs are expected to master the characteristics of individual sounds by understanding the articulatory concept (e.g., tongue placement, jaw movement, and lip rounding) (Major, 2001). In fact, the articulatory phonetics approach was the conceptual basis for teaching pronunciation until the 1960s (Morley, 1991). Flege, Bohn, and Jang (1997) suggested that incorrect production of consonants and vowels can cue foreign accent in part.

It is common knowledge that adult ELLs in general have difficulties in both perceiving and producing phonemes that are not found in their L1 (Strange, 1995). Even after receiving extensive training, segmental differences often persist for some adult ELLs (Major, 2001; Munro & Derwing, 2008). The mechanisms tuned to L1 have accounted for ELLs‟ segmental difficulties in both articulation and perception (Rochet, 1995). Perception, in particular, was discovered to become language-specific within the first year of life (Werker & Pegg, 1992); then L2 segments are assimilated to L1‟s phonetic system and can limit ELLs‟ abilities to discriminate the contrasts (Strange, Akahane-Yamada, Kubo, Trent, Nishi, & Jenkins, 1998).

Defining the Suprasegmental Level

Changes on the perspective of L2 learning and teaching arose in the 1960s. Accent modification was reconsidered as more than phonetic and phonemic levels of analysis (Strange, 1995). In a real stream of speech, a word is not produced by pronouncing a discrete and static segment. Instead, the articulators (i.e., typically tongue, lips, teeth, palate, and jaw defined by Edwards, 2003) constantly move and overlap temporally, influencing adjoining phonemes‟ productions (i.e., coarticulation) and creating transitions between articulatory postures. As a result, normal speech becomes connected continuously to flow smoothly and to be dynamic (i.e., coarticulatory effects) (Edwards & Strattman; 1996; Garn-Nunn & Lynn, 2004).

The suprasegmental level, which is collectively referred to as prosody or speech melody, is, hence, over and above the segmental level and contributes to create an overall speech rhythm (Garn-Nunn & Lynn, 2004). The suprasegmental aspects can be broadly subsumed under stress, length, tone, intonation, and overall rhythm and timing (Couper-Kuhlen, 1986; Edwards, 2003; Field, 2005; Major, 2001); which are generally treated as a "unitary construct" (Field, p. 403). Rosse (1999) held that learners‟ difficulties with the segmental features are generally individually different, whereas the suprasegmental features are rather similar among many learners. Also, the aspects of importance of the features in the hierarchy vary among the theoretical frameworks.

So far, investigators of numerous empirical studies (e.g., Anderson-Hsieh, Johnson, & Koehler, 1992; Derwing, Munro, & Wiebe, 1998; Edwards & Strattman, 1996; Field, 2005; Gilbert, 1984; Morley, 1991; Riney, Takagi, & Inutsuka, 2005; Sikorski, 2005) have concluded that the suprasegmental level is more relevant to intelligibility and comprehensibility than the segmental level.

In addition, Curzan and Adams (2009) investigated prosody from the physiological perspective. They maintained that babies learn the prosody of the language before they are born, because they start hearing sounds around seven months in the womb. Because their hearing is distorted by the amniotic fluid, they hear mostly low frequencies and the intonation and stress patterns of the language spoken around them, particularly of their mothers‟ patterns. Prosody can be claimed as an in-born nature of language acquisition.

Defining the Nonverbal Level

Behavior that conveys thoughts or feelings without actual words, nonverbal communication such as body language, can communicate the intention of speakers (McLaughlin, 2006). Taking into account that language learning is a complex and multi-dimensional phenomenon, individual differences other than verbal can play an important role for L2 learning. Parker and Riley (2010) posited that such differences can be categorized according to age, cognitive style, personality traits, and social-psychological factors. Oxford and Ehrman (1993) included aptitude and gender as affective differences.

Eysenck (1994) maintained some of such differences are more significant to psychology and named personality as a major influential factor for people‟s behaviors. Kelly (1955) also theorized in his Personal Construct Theory (PCT) that each individual constructs his or her understanding differently and uniquely, which is a core structure that maintains an individual‟s identity and existence. The core structure is also another word for *core role* that determines an individual‟s way to interact with others (Winter & Viney, 2005). DiLollo, Manning, and Neimeyer (2003) defined the core role as an “individual‟s self image” (p. 169).

Experiences in a diverse culture create an individual uniquely different from the others. Oliver and Schlutsmeyer (2006), who applied Kelly‟s PCT to multiculturalism, held that Kelly‟s notion of core role is particularly beneficial to approach "culturally-sensitive" individuals (p. 107), because these individuals bestow on them their most profound sense of personal meaning. When L2 learning is filled with uncertainty about pronunciation, semantics, syntax, pragmatics, and culture-related perceptions, individual differences are important predictors of good language learning (Dörnyei, 2005; Naiman, Fröhlich, Stern, & Todesco, 1996).

Variables within the Segmental Level

Defining the verbal and nonverbal aspects of variables to facilitate foreign accent modification is followed by further investigations of components in each level. More specifically, studies focused on consonants and vowels are examined.

Consonants. Studies of consonants on cross-language differences have a long history from the beginning of the pronunciation instruction (Strange, Akahane-Yamada, Kubo, Trent, Nishi, & Jenkins, 1998). The consonants are produced by partially or completely constricting the vocal tract (Edwards, 2003). They have traditionally been classified by three characteristics: place of articulation (i.e., location of airstream or parts of the speech mechanism in consonant production), manner of articulation (i.e., the way the airstream is modified), and voicing (i.e., voiced with vocal fold vibration and voiceless without vocal fold vibration) (Garn-Nunn & Lynn, 2004). This suggests that mastering these characteristics of the consonants builds an essential foundation of the sounds.

The characteristics of consonants are relatively easy to teach for identification and discrimination tasks of perception and production, because they can be perceived categorically (Strange, Akahane-Yamada, Kubo, Trent, Nishi, & Jenkins, 1998). Consonants have been studied more thoroughly than vowels. Some studies on Japanese ELLs include effects of discrimination training on the perception of /r/ and /l/ (Strange & Dittman, 1984), perception and production of English /r/ and /l/ distinction (Bradlow, Akahane-Yamada, Pisoni, & Tohkura, 1999), substitution of the Japanese flap /ɾ/ for English /r/ and /l/ (Riney, Takada, & Ota, 2000), and the effect of audiovisual perceptual training on the perception and production of consonants (Hazan, Sennema, Iba, & Faulkner, 2005).

Vowels. Vowels, another kind of the most basic sound, have been found to be more difficult to teach and learn than consonants**.** Their articulatory properties cannot always be clearly described and vowel articulation is not easy to observe without special instrumentation (Wang & Munro, 2004). In contrast to consonants, American English vowels are formed with the same manner of production by a relatively unobstructed vocal tract (Garn-Nunn & Lynn, 2004). They are all voiced and have traditionally been classified by the tongue position (i.e., front, central, back) and tongue elevation (i.e., high, mid, low) with supplemental lip rounding and tenseness (Garn-Nunn & Lynn).

The physical dimensions of the vowels, (i.e., tongue height and tongue advancement), influence the nature of vowels acoustically. High vowels (/i, ɪ, u, ʊ/) have less amplitude than low vowels (/æ, ɑ/), and shorter in time than low vowels. The front tense vowels (/i, e, æ/) display as longer in time, whereas the back vowels (/ɪ, ɛ /) display as shorter in time (Kent, Dembowski, & Lass, 1996).

These characteristics of vowels are generally not perceived categorically when presented as individual sounds (Strange, Akahane-Yamada, Kubo, Trent, Nishi, & Jenkins, 1998). Compared with consonants, vowels have not been studied extensively; especially investigations on Japanese ELLs are scarce. Limited studies for Japanese ELLs include training Japanese listeners to perceive American English vowels (Nishi & Kewley-Port, 2007), training on the identification and production of American vowels (Lambacher, Martens, Kakehi, Marasinghe, & Molholt, 2005), and perceptual assimilation of American English vowels (Strange, Akahane-Yamada, Kubo, Trent, Nishi, & Jenkins). Studies for general ELLs include longitudinal investigations of L2 vowel acquisition (Munro & Derwing, 2008) and roles of experience on NNESs‟ productions and perceptions of English vowels (Flege, Bohn, & Jang, 1997).

Variables within the Suprasegmental Level

Although the constituents of the suprasegmental level contribute to create an overall speech rhythm, each element plays a role differently to intelligibility (Field, 2005). Before pursuing investigations of roles, the terms: accent and stress, need to be defined.

Accent and Stress. The term accent such as in foreign accent has been used as a variation of speech associated with region, culture/ethnicity, or social class (ASHA, 2009; Garn-Nunn & Lynn, 2004). Accent, however, is often used as a synonym of stress indicating extra force; therefore, accent and stress are used interchangeably (Edwards, 2003). Garn-Nunn and Lynn defined accent as a form of stress and suggested restricting accent to the stress placed on a particular syllable in a word compared with the other syllables of the word form. The term stress

is used in the current study hereafter to restrict the meaning to emphasis. It is generally known that there are two kinds of stress: word and sentence stress.

Word Stress. Word stress is also referred to as lexical stress (Field, 2005). It is the degree of force applied in a syllable of a word; distinction of which is stressed or unstressed syllables. It is the smallest unit that can have distinct meaning on its own (Brown & Kondo-Brown, 2006). The central role of word stress is to help listeners divide continuous speech into words by providing cues when words begin and end (Field). Bond (1999) indicated that NESs listen to the stressed syllables of words rather than unstressed syllables to determine reliable information.

There are three levels of word stress: primary (or alternatively strong), secondary (or alternatively medial), and unstressed (or alternatively tertiary); which are placed in words with two or more syllables (Celce-Murcia, Brinton, & Goodwin, 1996). A primary stress is generally marked with the International Phonetic Alphabet (IPA) symbol of ['] above and to the left of a syllable. A secondary stress is placed below and to the left of a syllable with [ˌ]. An unstressed syllable is not marked (Garn-Nunn & Lynn, 2004). For example, *nationality* has three levels of word stress transcribed with IPA as [ˌnæʃən'ælətɪ]: secondary, unstressed, primary, unstressed, and unstressed respectively (Celce-Murcia et al.).

In his study of the association between lexical stress and intelligibility, Field (2005) found that misplacement of stress caused an impairment of intelligibility. His report included striking results that the impairment was greater when stress was shifted from left to right (e.g., 'husband to hus'band) than from right to left (e.g., en'joy to 'enjoy). Stress on the incorrect

syllable has been identified by individual listeners as confusing and strongly affecting comprehensibility.

Sentence Stress. Another kind of stress beyond the word level is sentence stress, which is also referred to as primary stress (Hahn, 2004). It is defined simply as a stress in a sentence (Brown & Kondo-Brown, 2006). In a similar way to the word stress, sentences have various stressed elements. For example, *Come to Canada* fits the same stress pattern as in *nationality*: secondary, unstressed, primary, unstressed, and unstressed respectively (Celce-Murcia, Brinton, & Goodwin, 1996).

Whether words in a sentence receive stress or not is generally determined by the category of words (Celce-Murcia, Brinton, & Goodwin, 1996). When words are divided into two categories of content words (i.e., information words) and function words (i.e., grammatical function words), content words are usually stressed, whereas function words are not. Content words include nouns, main verbs, adjectives, adverbs, possessive pronouns (e.g., *mine*, *yours*), demonstrative pronouns (e.g., *this*, *that*), interrogatives (e.g., *who*, *where*), and negative contractions (e.g., *can't*, *isn't*). Function words include articles, auxiliary verbs (e.g., *do*, *have*), personal pronouns (e.g., *we*, *they*), possessive adjectives (e.g., *my*, *his*), demonstrative adjectives (e.g., *this*, *that*), prepositions, and conjunctions (e.g., *and*, *but*).

Hahn (2004) conducted an experimental study of the effects of stress on new and contrastive information and intelligibility. Her finding was the placement of correct sentence stress helps NESs respond and process discourse more quickly and easily.

Pitch, Tone, and Intonation. Pitch is the primary element of stress in American English (Edwards & Strattman, 1996), and pitch in a syllable controls tone. Phonetically, pitch is relative and refers to the differentiated level (high or low of the voice) of the same speaker (Celce-Murcia, Brinton, & Goodwin, 1996). Tone refers to the pitch pattern applied to a word. In a tonal language like Chinese, varied pitch (e.g., rising and falling) on a syllable results in changing the meaning of a word (Major, 2001). Intonation is inclusive of pitch and tone, and it refers to pitch inflections of the voice on a whole sentence (Celce-Murcia et al.). The roles of pitch, tone, and intonation are to signal syntactic, semantic, and discourse information. They play a major role for perception of NNESs‟ spæch. The application of nonnative pitch or intonation may cause some communication difficulties (Major).

Length. Length is the relative duration of a syllable, which is generally determined by vowel duration**.** Like stress, pitch, and intonation, emphasis may be demonstrated by lengthened vowels (Edwards, 2003). Phonemes naturally vary in duration; tense vowels (i.e., /i, e, ɔ, o, u/) are the longest. Vowel length is also affected by its environment in a word. For example, vowels become longer before a final voiced consonant than before a voiceless consonant, (e.g., *seed* and seat) (Celce-Murcia, Brinton, & Goodwin, 1996; Major, 2001).

Vowel length can be most perceptible when words are produced in isolation. In actual speech, however; vowel length can also be influenced by factors such as vowel occurrence within a stressed or unstressed syllable or the word receiving prominence (Celce-Murcia, Brinton, & Goodwin, 1996). Moreover, vowels can be identified acoustically by duration, pitch, and intensity; which is discussed further in Acoustical Aspect of Speech section.

Overall Rhythm and Timing. Rhythm and timing are created by the combination of word and sentence stresses and length. English is a stress-timed language. The durations between the primary stressed syllables are almost equal in length regardless of the number of intervening syllables. This is accomplished by lengthening stressed syllables and reducing unstressed syllables (Major, 2001).

Edwards and Strattman (1996) identified two significant individual processes involved in controlling the length of syllables: ligatures and blends. Ligatures are formed when a consonant at the end of a word is connected to a vowel at the beginning of a next word, forming a syllable, **(**e.g., *thanks a lot = thank-sa-lot*). Edwards and Strattman classified the blends further to vowel and consonant blends. A vowel blend is formed when a vowel at the end of a word is connected to a vowel at the beginning of a next word, (e.g., *He is*…becomes *He /y/-is*…). Similarly, a consonant blend is formed when the same consonants or similar consonants are connected, (e.g., *I'll call later* becomes *I'll ca-later*). They claimed that ligatures and blends contribute to creating an overall melody to speech. Additionally, Edwards and Strattman's ligatures and blends in connected speech are also referred to as linking (or liaison) (Brown & Kondo-Brown, 2006; Celce-Murcia, Brinton, & Goodwin, 1996).

There are more processes to create continuous sequences (i.e., connected speech) in spoken language, which include reduction, assimilation, and omission. Reduction is a process that phonemes are changed or eliminated in words. Vowels in unstressed syllables, for example, are reduced to schwa /ə/ (e.g., *television*: /'tɛlɑvɪʒɪn/ would be /'tɛləvɪʒən/) (Brown & Kondo-Brown, 2006). Assimilation is a process during which one phoneme is changed to another influenced by a neighboring phoneme (e.g., *had to* becomes /hædə/ in progressive, *grandpa* becomes /græmpɑ/ in regressive) (Celce-Murcia, Brinton, & Goodwin, 1996). Omission is a

process during which sounds are deleted or not clearly articulated in certain contexts (e.g., *hands* become /hænz/) (Brown & Kondo-Brown).

Moreover, the speed of the speech (i.e., rate) also affects timing. The speaking rate is influenced by some factors such as the length and number of pauses in an utterance, duration affected by stressed or unstressed syllables, and emotion of a speaker (Garn-Nunn & Lynn, 2004). The speaking rate affects the listener‟s understanding and attentiveness. Additionally, it is measured by counting the number of words per unit of time. Hull (2009) indicated that an utterance spoken at a rate of approximately 124 words per minute works best for listeners to understand speakers.

Overall rhythm and timing provide an important cue to affect NESs‟ comprehensibility, because listeners generally rely on the stressed syllables for recognizing essential information (Bond, 1999; Celce-Murcia, Brinton, & Goodwin, 1996; Edwards, 2003; Field, 2005; Wong, 1993). Some researchers (e.g., Anderson, 1993; Hahn, 2004; Mochizuki-Sudo, & Kiritani, 1991) suggested that NNEs‟ L1 largely interferes with their abilities to produce appropriate English stress patterns and rhythm, which can lead to a communication breakdown.

Acoustical Aspects of Speech

The linguistically analyzed speech from the aspects of speakers and listeners was discussed in the preceding sections. Stressed syllables are produced with physiological force, which can be identified as longer duration, higher in pitch, or greater loudness in a perceptual dimension. Duration is a component of timing, pitch is a component of intonation, and loudness is of stress. Speech is examined from the acoustical aspects next.

Dimensions of Speech. Couper-Kuhlen (1986) explained characteristics of speech systematically from the perspective of a speaker (articulatory), a listener (auditory), and acoustic representations. Speech, which is produced by the timing of articulator movements, is identified acoustically as time and perceived as duration (auditory). Speech, which is produced by vibration of the vocal folds (articulatory) is identified acoustically as fundamental frequency (F0) and perceived as pitch (auditory). Speech, which is produced by physical effort (articulatory) is identified acoustically as intensity and perceived as loudness (auditory). It is evident that physiological aspects of speech and acoustical speech correlate directly but in a more complicated way (Shoup & Pfeifer, 1976).

Acoustically Viewed Dimensions. Acoustic phonetics is the scientific study of speech sound. With the advent of computerized instruments, the auditory data of duration, pitch, and loudness can be synthesized and analyzed acoustically by means of F0, intensity, and time. Frequency is the number of back-and-forth movement of the vocal folds per second. Repetition of one complete cycle of a sine wave per second is measured and is represented by Hertz (Hz). Amplitude is the distance of the sound wave and is measured in decibel (dB). Time shows changes of frequency and amplitude over time on a time axis (Couper-Kuhlen, 1986; Pickett, 1999). The waveform and spectrogram are two of the most commonly used graphic representations of the sound wave. The height of the waves in the waveform shows the loudness (y-axis) that changes over time (x-axis), which is associated with stress in utterance. The spectrogram presents the frequency change (y-axis) and loudness change (by darkness) over time (x-axis) (Varden, 2006). Listeners‟ judgment of stress correlates with duration, F0, and intensity.

The order of parameters that provides a cue for the presence of stress is generally F0 first, then, duration, and intensity last (Lehiste, 1970).

Additionally, length of pharyngeal-oral tract depends on the physical size of the speaker, and the length affects the frequency locations of all the vowel formants. The longer the tract, the lower are its average F0. Males" pitch range is 75 to 300 Hz, and women"s 100 to 500 Hz (Pickett, 1999).

Variables within the Nonverbal Level

Nonverbal Communication. McLaughlin (2006) proposed six behaviors that can communicate without words. They are facial expression, (e.g., smiles, grimaces); head movements, (e.g., nodding, shaking); eye contact, (e.g., rolling, winking); body language, (e.g., arm folding, leg crossing); gestures, (e.g., stopping, beckoning); and proxemics, (e.g., close, distant). These nonverbal behaviors generally accompany verbal communication. Moreover, Marsh, Elfenbein, and Ambady (2003) reported that facial expression is a "nonverbal accent" (p.373), which represents cultural differences.

Age. The role of age on language learning has been a topic of debate. Although it has commonly been assumed that age alone is a predictor of L2 proficiency, there is some evidence to suggest that this is not true for every aspect of language learning. Concerning pronunciation, some empirical research demonstrated that the starting age to acquire L2 is a powerful determinant of success in near-native or non-accent, and puberty is an important turning point for this aspect of language learning (Dulay, Burt, & Krashen, 1982; Oyama, 1976). Lenneberg (1967) provided evidence neurologically, claiming that lateralization of the brain is completed at

puberty. The ability to acquire a new language subconsciously deteriorates, and foreign accent emerges around puberty when the left hemisphere of the brain becomes more responsible for language.

As for learning grammatical rules of L2, however, some researchers suggested that adults have an advantage over children (e.g., Dulay, Burt, & Krashen, 1982; Krashen, 1981). Dulay et al. argued that older learners are capable of dealing with the abstract nature of language more consciously than younger learners, supporting Piaget"s stages of cognitive development. Piaget named the fourth and last sage of cognitive development as formal operational, when adolescents (from age 11 years) and beyond become capable to abstract, reason, classify, and generalize; showing more mature cognitive systems (McLaughlin, 2006).

Regarding rate of learning, Dulay, Burt, and Krashen, (1982) suggested that adults tend to make faster progress in learning languages in the early stages, but in the long run, few reach high standards of language proficiency. Children, on the contrary, tend to make slower progress learning the grammar of L2 in the early stages, but they can achieve very high levels of proficiency if given sufficient time and exposure (about 2 to 3 years of L2 exposure).

Cognitive Style. Cognitive style refers to the way that learners approach problem solving, conceptualization, and organization of information (Parker & Riley, 2010). Brown (1994) referred to cognitive style as a link between personality and cognition. He defined *style* specifically as "consistent and rather enduring tendencies or preferences within an individual" (p. 104). There are two types of cognitive style: field independence and field dependence. Field independence is an analytical style in which a learner is able to distinguish the essential from the irrelevant. Field dependence is, conversely, a holistic style in which a learner perceives the field

as a whole and does not differentiate individual parts embedded in the field (Brown, 1994; Parker & Riley, 2010). Parker and Riley found that field independence can be correlated with successful L2 learning on the one hand; on the other hand, no conclusion has been made for either style. Brown suggested L2 learners can exercise either style appropriately in various contexts.

Personality Traits. Personality, "the most individual characteristic of a human being" (p. 10), represents attributes to characterize an individual (Dörnyei, 2005). Dörnyei also emphasized that personality is "consistent patterns" (p. 11) of an individual"s behavior regardless of situations.

Risk-taking, first of all, has been found as one such trait. Oxford and Ehrman (1993) maintained that a degree of ambiguity tolerance is essential for successful language learning. Rubin (1975) also posited that good language learners have tolerance for risk, suggesting they are willing to make mistakes and to appear foolish to be able to learn. More details are discussed in the Focus on Risk-Taking Behavior section.

The role of extraversion-introversion is also often discussed as a personality trait. It first needs to be noted that *extraversion* is an original spelling of *extroversion*. The spelling of *extraversion* is rarely used now (New Oxford American Dictionary, 2005), but it is officially accepted (Morris, 1979). It is decided to use e*xtraversion* in this study to honor Eysenck, who was a developer of a specific personality scale. Eysenck and Eysenck (1968) summarized the primary traits of an extravert as "outgoing, impulsive and uninhibited, having many social contacts and frequently taking part in group activities" (p. 6). As for introversion, they provided opposite portraits claiming the introvert is typically quiet, introspective, reserved, not impulsive,

distant, and serious. There have been no clear conclusions whether extraversion or introversion contributes to L2 learning, because different tasks require more particular traits (Dörnyei, 2005). Some studies (e.g., Brown, 1994; Naiman, Fröhlich, & Stern, 1975), however, reported a positive relationship between extraversion and L2 proficiency, especially in oral skills.

Empathy is also treated as a relevant personality trait for L2 learning. Empathy refers to identifying another person‟s feelings and understanding them based on an awareness of one‟s own feelings first (Brown, 1994). When the social aspect of language is considered, a certain degree of empathy is required for communication. In oral communication, for example, a speaker needs to know the other party‟s cognitive and psychological states for an effective interaction (Brown). In learning L2, understanding cross-cultural empathy should be particularly important.

Social-Psychological Factors. Social-psychological factors refer to learners‟ attitudes towards L2 learning which can include motivation, self-esteem, and anxiety. Motivation, in particular, is hypothesized as an essential force for L2 learning (Brown, 1994; Gardner & MacIntrye, 1993; Rubin, 1975). Motivation provides the initial impetus to learn L2 and supports learners to go through a long process of learning. The term motivation is derived from a Latin verb *movere* meaning to move. It suggests something that "moves a person to make certain choices, to engage in action, and to persist in action" (Ushioda, 2008, p. 19). Two basic types of motivation that have been identified are instrumental and integrative. Instrumental motivation refers to motivation to learn language for practical goals such as future career, translating documents, or reading materials. Integrative motivation refers to learners‟ wishes to integrate themselves with the community or culture of the L2 group (Brown; Parker & Riley, 2010).

Self-esteem refers to a personal judgment of value and worth towards self, which can be "the most pervasive aspect of any human behavior" (Brown, 1994, p. 136). Feeling good about oneself is linked to mental health and it is a "fundamental human motivation" (Brown, 2008, p. 293). No successful L2 learning can be carried out without a certain degree of self-esteem. Beebe (1983) states that good learners have a "healthy self-esteem which leads them to be less prone to expecting that their normal errors make them look foolish" (p. 46).

Anxiety refers to an individual's subjective feeling of tension, apprehension, nervousness, and worry (Horwitz, 2001; Horwitz, Horwitz, & Cope, 1986). Anxiety associated with language learning (i.e., language anxiety) is argued as being most closely related to L2 learning (MacIntyre & Gardner, 1991; Oxford & Ehrman, 1993). When anxiety is considered as a complex and multidimensional phenomenon intertwined with a cluster of different constructs (Brown, 1994; Hilleson, 1996), it may help to consider the anxiety from the perspective of Kelly's PCT (1955), which was briefly introduced in Defining the Nonverbal Level section.

According to Kelly (1955), each individual learns based on his or her core construct system, which is a core structure that maintains an individual's identity and existence. Kelly also referred to the personal construct theory as a "role theory" (p. 179). The core role/dominant role of NNSEs can be „I am a speaker of my native language" and their new role/non-dominant role can be „I am a speaker of English." When "culturally-sensitive" individuals (Oliver & Schlutsmeyer, 2006, p. 107) need to take a new role as an English speaker, and if they cannot successfully integrate the meaningfulness of their new speaker role, they may feel anxiety. Anxiety occurs because they find that the new role of English speaker is outside of their construct system and they cannot make meaningful interpretation of the role. Winter (1992) gave culture shock as an example of the anxiety. They may even feel threat, because they are

aware that their role is changed (Landfield & Leitner, 1980). Although the change does not have to be negative, they feel the change as far-reaching during transition when they have to be out of their central constructs. It is even possible that they feel guilt when they experience the new role as something totally contradictory to their core constructs (Kelly).

Anxiety can be observed from another perspective of performance. When language anxiety can cause an interference with the acquisition, retention, and production of L2, anxiety is a major obstacle to be overcome. Some researchers have concluded that anxiety negatively affects performance in the second language (i.e., debilitating anxiety) (e.g., Horwitz, Horwitz, & Cope, 1986; MacIntyre & Gardner, 1991; Oxford & Ehrman, 1993). Young (1992) claimed that listening and speaking are the main sources of anxiety. Dörnyei (2005), however, argued that anxiety can promote performance positively (i.e., facilitating anxiety). For example, anxiety motivates the students to study when they need to take a test.

Aptitude. Aptitude and ability are generally used synonymously. In fact, Dörnyei (2005) suggested that language aptitude is the same as language ability in the L2 learning context. Language aptitude is complex, because its construction can be associated with other variables such as age, teaching methods, and learning situations. Dörnyei argued that language aptitude predicts the progress rate that individuals make in learning rather than the capability of L2 learning. Unless an ELL is extremely low in aptitude, a learner with low language aptitude scores needs more effort and motivation for successful L2 learning.

Summary of Variables to Facilitate Foreign Accent Modification

The most common view of categorizing the major variables to facilitate foreign accent modification is the verbal level of segmental and suprasegmental aspects. The segmental level is the most basic level of sounds; the suprasegmental level is over the segmental, and contributes to create a speech rhythm. The suprasegmental level has been concluded as the most influential factors for facilitating foreign accent modification by numerous researchers. The speech physiology is also correlated to speech acoustics directly but in a more complicated manner. Listeners‟ judgment of differences in duration, pitch, and loudness of speakers‟ utterances can be identified and measured acoustically by means of time, F0, and intensity using computerized instrumentations.

In addition to the verbal level, the contribution of the nonverbal level to facilitate foreign accent modification is immense. Besides nonverbal behaviors, elements such as age, cognitive style, and personality traits are interwoven into oral communication and facilitate communicability. Language learning is a complex and multi-dimensional phenomena. Researchers have not been able to conclude the most influential factor in L2 learning because of the variety of elements subsumed under the nonverbal level (Scovel, 2001).

Linguistic Comparison between Japanese and American English

Some linguists argued that the most important linguistic factor that influences the second language learning is the interference of L1 with L2 for pronunciation (e.g., Major, 2001; Scovel, 2001). The interference was claimed to be based on behavioral psychology as an old habit intrudes when learning something new (Scovel). The linguistic comparisons of the major

features presented in this section aim to examine the possible reasons for difficulties that Japanese individuals may experience during the course of learning English.

Language Family

American English is a West Germanic language, one of the branches of the Indo-European family tree. While Japanese does not have a clear genetic relationship with other languages, it is often considered to be a member of the Altaic family. Japan is also an island nation that is physically separated from other countries; therefore, Japanese is often called an isolated language (Crystal, 2002). Japanese and American English belong to two totally different families; they do not have any geographical point of contact either. These facts can be the source of phonological deviations between two languages.

Segmental Differences

Vowels. There are 14 monophthongs in American English vowels (Garn-Nunn & Lynn, 2004), whereas there are only five (/ɑ, i, u, e, o/) in Japanese (Shibatani, 1990). Although the phonetic symbols of these Japanese vowels appear to be the same as English, production is not exactly the same as English. Some examples include: (a) the Japanese high back vowel /u/ is not accompanied by lip rounding (it is often shown as /ɯ/ to indicate the unrounded sound) as English does, (b) the Japanese high front vowel /i/ does not involve wide lip spreading as English does, (c) and the Japanese /e/ is slightly higher than American English /ɛ/ (Tsujimura, 1996).

Consonants. The only Japanese consonants that are not found in the English phonetic inventory are /f/, /v/, /θ/, /ð/, and /l/ (Tsujimura, 1996). The manner of articulation of some

Japanese consonants is, however, somewhat different from that of English. For example, the Japanese voiceless stops /p, t, k/ at the beginning of the words are not aspirated or are less aspirated compared to those of English. Additionally, English /r/ and /l/ distinction aurally and orally for Japanese ELLs is quite a challenge, because these consonants may be assimilated to a Japanese /r/ category (Best & Strange, 1992).

Suprasegmetal Differences

Rhythmic Types. Japanese is a mora-timed language, whereas English is a stress-timed language. Japanese mora is the smallest unit of timing, all of which are pronounced with equal length and loudness (Major, 2001). Each mora consists of a consonant and vowel combination, a vowel alone, and/or a nasal /n/ alone (McCawley, 1968). For example, a Japanese word for newspaper is *shinbun*; it is a word of four moras, *shi-n-bu-n*, not two syllable of *shin-bun*. This mora system may become a possible phonological challenge for some Japanese ELLs by making their utterances with less intonation variation (Wennerstrom, 1994).

Also, some Japanese ELLs may subconsciously add an extra vowel to an English word ending in a consonant because of the construction of mora. For example, milk /mɪlk/ can be pronounced as /mɪlkʊ/ by adding /ʊ/ at the end.

Stress and Intonation. A combination of word and sentence stresses creates a rhythm of speech in English, contributing as an important cue to intelligibility and comprehensibility. Pierrehumbert and Hirschberg (1990) held that there are six distinctive pitch patterns in English phonologically, whereas there is only one pitch accent in Japanese (Beckman & Pierrehumbert, 1986). Particles (i.e., a minor function word), instead, are used to indicate the functional

variation (Wennerstrom, 2001). Phonologically speaking, results of some studies indicated that intonation is language-specific, and it is difficult for adult Japanese ELLs in general to learn a new system. Wennerstrom (1994), for example, has investigated Japanese ELLs‟ English sentence stress and found difficulties in the production of English sentence stress patterns. Wennerstrom also reported that Japanese ELLs did not use as much pitch difference to contrast significance in an oral reading as NESs did. She also found in the same study that Japanese ELLs used smaller pitch ranges than NES did.

Pragmatics

The practical aspect of language use is quite different between Japanese and English. In Japanese, there are differences between males‟ and females‟ speech, including some exclamatory expressions (Shibatani, 1990). There is, however, a neutral language that both genders can use. None of these are found in English. Also, speakers use different forms of the language based on their evaluation of listeners (e.g., age, social status, and familiarity) including honorification in Japanese (Shibatani). Depending on the social context, the degree of formality form of the language varies as well. Even though English has the differences in form, the distinction is not as strict as Japanese.

There is also a function of speech acts (i.e., communication involving a speaker‟s intention and a listener‟s interpretation of the message, McLaughlin, 2006) in Japanese that is largely different from English. When answering a negative question by “yes” or “no,” Japanese “yes” and “no” function totally opposite of English. For instance, when A asks B in Japanese, “Aren‟t you going to school today?” B‟s answer “Yes” means B is not going to school. In English, on the other hand, if B‟s answer is “Yes,” he is going to school today. Answering „yes‟

or „no‟ questions is decided by the intention of the respondent in English, whereas it is decided by responding to the question asked in Japanese. In Japanese, when B answers "Yes," he/she responds to the questioner first, suggesting "Yes, what you have just said is correct. I am not going to school today." When B answers "No," he/she responds by suggesting "No, what you have just said is not correct. I am going to school today." Answering "yes" or "no" in English, can be one of the challenges that Japanese ELLs confront.

Summary of Linguistic Comparison between Japanese and English

Japanese and English are two completely different languages starting from a language family. They also differ in segmental levels where different number of consonants and vowels and the manner of articulation are involved. In suprasegmental level, rhythmic types and functions of stress and intonation are different as well. Moreover, some aspects of pragmatic use are not the same between these two languages. These dissimilarities can create challenges for some Japanese ELLs when they learn English.

Cultural Comparison between Japan and the US

It is commonly viewed that language is a part of culture. Nault (2006) metaphorically suggested that language and culture "represent two sides of the same coin" (p. 314). Hence, learning L2 should not be separated from understanding the culture of L2‟s country. The cultural comparison between Japan and the US aims to examine other challenges that Japanese ELLs may experience.

Overview of Culture

Cheng (1987) defines culture as "a system of standards for perceiving, believing, evaluating, and acting; it is composed of behavior patterns, symbols, institutional values, and other manmade elements of society" (p. 3). Culture also influences the shaping of personality (Benet-Martinez & Oishi, 2008). With an advancement of technology, people in today's world have more opportunities to be in contact with other cultures and one influences the another. Nonetheless, inherently acquired culture of an individual is often difficult to change and cultural conflicts can arise when individuals with different cultures coexist (Cheng).

Contrastive Views

When students arrive in the US from Japan to learn English, they are compelled to make certain adjustments to varying degrees. "[The] maintenance of harmony" (p. 71) is valued, and modesty is an important virtue in Japan (Cheng, 1987). Japanese are considered more collectivistic and conform to groups (Takano & Sogon, 2008). In contrast, individuality is more valued, and expressing oneself openly in the US is encouraged. In Japan, even if students do not volunteer answers, they are not necessarily considered as having no answers, whereas silence in response to questions is not appreciated in the US classroom in general. Lynn and Hampson (1975) reported that the US was the most extraverted country and Japan was the least in their study of nationality and personality.

C. Barb, who has been teaching foreign accent modification at the college level, shared some of her observations about Asian students' behavior in her classroom. Asian students such as Korean, Chinese, and Japanese generally feel comfortable in a group and sit together in the classroom. Most do not share their answers until they are called upon. New comers especially

cast down their eyes and use few gestures. It takes time for them to "break out of their skin" (personal communication, January 28, 2010).

Summary of Cultural Comparisons between Japan and the US

Japan and the US are culturally contrastive as well. A collectivistic social view of Japan and an individuality-focused American society, as well as general national traits of introverts among the Japanese and extraverts among Americans, represent cultural differences with the potential to influence abilities to modify speaking. The cultural analyses between the two countries, as well as the linguistic analyses, were aimed to facilitate understanding of the challenges that some Japanese ELLs experience in the course of learning English.

Focus on Emphasis

Defining Emphasis

Emphasis refers to stressing of a word or words in a phrase or sentence. Basically, emphasis and stress are used as the same, and their function is the same as well. Garn-Nunn, and Lynn (2004), however, treat emphasis differently from stress. They claim that the application of emphasis does not follow as consistent a pattern as stress does. Emphasis is personal and follows a speaker"s communicative intent, and it adds information to an utterance.

Manifestation of Stress

Edwards (2003) indicated that there are several ways to address emphasis to speech. Linguistically, stress can be added by using an auxiliary verb with phonetic stress such as "I do

love you" instead of "I love you" (p. 332). Each word of the same sentence can be produced loudly, or even one specific syllable can be produced longer than others like "I looooove you" (P. 332). Pause also can be inserted before the important word like "I [pause] love you" (p. 332). Moreover, quality or tone of the voice can be changed.

None of these mentioned above, however, are used as often as pitch to add emphasis to speech according to Edwards (2003). The word *love* is produced in higher pitch than *I* and *you*, claiming pitch as "the primary element of phonetic stress in American English" (p. 322). Consequently, intonation of speech is determined by pitch changes. Intonation contours resulting from the pitch inflections help enhance meaning without changing meaning (Garn-Nunn & Lynn, 2004). The placement of prominence can be done by the speaker‟s wish to highlight (Celce-Murcia, Brinton, & Goodwin, 1996).

Placement of Prominence

Although the placement of prominence can be done by following the unwritten rules, there are general agreements that are followed.

New Information. Words to express new information are presented in strong stress and high pitch, whereas words expressing old or given information (i.e., predictable information) are not (Hahn, 2004). Examples below by Allen (1971) show how prominence is placed on new information (presented by capital letters) (p. 77).

"X: I‟ve lost an umBRELla.

Y: A LADY‟s umbrella?

X Yes. A lady‟s umbrella with STARS on it. GREEN stars."

X‟s first utterance of *umbrella* is new information. *Umbrella* in Y‟s response, however is no longer new information. Instead, prominence is placed on *lady's*, because it is new information. In the last sentence, *lady's* and *umbrella* are old information, but the first use of *stars* and *green* provide the new information that is to receive prominence. The second *stars* are already old information.

Emphatic Stress. The emphatic stress refers to prominence that a speaker chooses to place, which is signaled by higher pitch level than new information (Celce-Murcia, Brinton, & Goodwin, 1996). They showed emphatic stress by using the following examples (p. 177).

"A: How do you like that new computer you bought?

B: I‟m REALly enjoying it!"

B‟s stress on *really* indicates a strong degree of his/her enjoyment.

Contrastive Stress. When two elements are contrasted in an utterance, both of them receive prominence. Celce-Murcia, Brinton, & Goodwin (1996) showed the contrastive stress by using "Did you say TUESday or THURSday" (p. 178).

Evaluation and Intonation

When a story is told in narrative, a teller‟s personal or cultural view point is reflected as evaluations to provide additional information to a story by manipulating intonation. Intonation can influence the discourse meaning (Wennerstrom, 2001). Pitch reflects a speaker‟s priorities to express emotion in narrative; conversely the highest pitched words are highly evaluative, which also have increased intensity and lengthened accent (Wennerstrom).

Internal Evaluations. One kind of evaluation is internal evaluation, which refers to syntactic usages such as use of auxiliaries, word order, and loaded lexical items. The loaded words include adverbs of intensification (e.g., really, totally); adjectives of emotional status (e.g., careful, upset); and nouns with positive or negative meaning (Wennerstrom, 2001).

Non-Phonological Use of Intonation

Although phonological use of intonation is claimed to be language-specific, some investigators found that it is not language-specific when demonstrating emotions. Wennerstrom (2001) maintained that intonation of the emotional aspects "ride „on top of" the phonological structure" (p. 186), explaining pitch is shown by degree difference depending on emotion and attitude of speakers. Shen (1990) also reported emotional expressions such as anger, surprise, and fear can be superimposed on any utterances.

Summary of Focus on Emphasis

Emphasis is a marker to show a speaker"s personal intent and it is most commonly addressed by pitch to add information to utterances. The words with highest pitch reflect a speaker"s priorities to express emotion. Often those words chosen as prominent are adjectives or adverbs. Emphasis helps create a rhythm/intonation in utterances. The rhythm is also fundamental to the interaction as they convey information, intention, and other discourse functions. Hence, understanding English-specific prosody is an enhancement for ELLs" communicability in L2.

Focus on Risk-Taking Behavior

Defining Risk-Taking Behavior

The literature includes vast definitions of risk-taking behavior, because some factors such as culture, situation, gender, age, motivation, and personality are interwoven, and they make risk-taking too complex of a term to define in a word. Some scholars, however, have attempted and defined it as follows. Breakwell (2007) defined risk in terms of two dimensions, probabilities and effects. Risk is the probability of a particular adverse event occurring and the extent of the harm associated with that event. Yates and Stone (1992) proposed that risk constructs are "(a) potential losses, (b) the significance of those losses, and (c) the uncertainty of those losses" (p. 4), treating risk-taking as decision making. Moreover, Beebe (1983) defined risk-taking as "a situation where an individual has to make a decision involving choice between alternatives of different desirability" (p. 39). In addition, Trimpop (1994) stated that "Risk taking is any consciously, or non-consciously controlled behavior with a perceived uncertainty about its outcome, and/or about its possible benefits or costs for the physical, economic or psycho-social well-being of oneself or others" (p. 9).

Affective Factors of Risk-Taking

Beebe (1983) posited that risk-taking is not a fixed trait; it varies depending on the situation, social setting, and personal characteristics. The affective situation includes the degree of chance versus skills, the influence of prior experiences, degree of interest in the task, and the value of reward. The influential social setting is group versus individuals. Risk-taking is observed more in decisions made by groups than made by individuals. The main personal

characteristics claimed as affective are age and gender. Generally, the older are less risk-taking than the younger. Gender, however, is not significantly different in risk-taking (Beebe).

Risk-Taking in L2 Learning

Examples of Risk. Beebe (1983) held that L2 learning involves taking the risk of various kinds, which can include in-classroom risks: a bad grade, a smirk from classmates, and fear of looking ridiculous; and outside classroom risks: fear of miscommunication, fear of alienation, and the worst of all, fear of identity loss. Additionally, L2 learner‟s perceptions of the risk of looking foolish is greater in the presence of peers from their own country than when with native speakers of English (Beebe). They know they cannot compete with native speakers of English in speaking, but they are afraid of being compared among their peers.

Risk-Taking and Motivation. Learners‟ attitudes support their motivation to learn language, which promote second language achievement (Gardner, 2000; Gardner, Lalonde, & Moorcroft, 1985). Learners with high motivation to achieve are moderate risk takers according to Atkinson (1964). Contrary to low achievers who tend to take high risks, high achievers prefer to control the probability of success depending on their skills and knowledge, and they do not take high risks.

Risk-Taking and Good Language Learner. When L2 learning is filled with uncertainty including pronunciation, meanings, syntax, and culture-related perceptions; a degree of ambiguity tolerance is essential for success in language learning (Oxford & Ehrman, 1993). Rubin (1975) also suggested that good language learners have tolerance for risk. They are

willing to make mistakes and to appear foolish to be able to learn. Moreover, good learners have a "healthy self-esteem which leads them to be less prone to expecting that their normal errors make them look foolish" (Beebe, 1983, p. 46). Brown (1994) also claimed that language learners are more successful if they take moderate but intelligent risks based on their background knowledge rather than taking no risk at all. In addition, Ely (1986) maintained that risk-taking decreases when students feel extreme discomfort in the classroom.

Risk-Taking and Extraversion-Introversion. Risk-taking is often considered related to extraversion-introversion in L2 learning (Ely, 1986). When L2 proficiency in pronunciation, reading, and grammar were considered, no positive correlation with extraversion was found (Busch, 1982). Oral skills, however, were found to have some positive correlation with extraversion. Naiman, Fröhlich, and Stern (1975) stated that extraverts were more successful language learners especially in oral skills. Brown (1994) also indicated that extraversion can be a favorable factor to develop oral communication competency because it requires more social interaction. Moreover, Busch found extraversion positively correlated with oral interview scores among male junior college students. In addition, C. Barb observed that when students were more extraverts, their progress in modifying foreign accent was faster than introverts (personal communication, January 28, 2010).

Rubin (1975) explained that extraverts are better in acquiring oral skills, because they have a strong desire to communicate. If they are successful in communication, their motivation to learn necessary skills for communication will increase. Therefore, they will create more opportunities to practice, using input to improve their skills and experiencing more success in

communication. Introverts, on the other hand, may not create such opportunities to practice their oral skills.

Risk-Taking from the Perspective Speech of Kelly's PCT. As a continuation of anxiety discussed from the perspective of Kelly"s PCT (1955) in Variables within the Nonverbal Level section, risk-taking behavior is analyzed further with application of his view. People can learn only what their framework is designed to allow them to do. Then, when they learn something new, they need a new system to accept the revised construct within the range of convenience in application. It is, however, not an easy task for some and they remain in old constructs. NNESs have been in a world where they are speakers of their native languages. When they need to construct a new system as speakers of English, "the individual must first weigh the damage to the existing system that may result" (DiLollo, Manning, & Neimeyer, 2003, p. 23). The task to construct a new system involves risk, which degree may vary depending on each individual.

Risk-Taking Scales

When assessing risk-taking behavior, two kinds of scales are available: domain specific and non-domain specific. A scale for domain specific situation (language classroom in this study) and a scale for assessing risk-taking behavior in a general situation are introduced here.

The Language Class Risk-Taking Scale. The Language Class Risk-Taking Scale developed by Ely (1986) is domain specific. The questionnaire is to measure the four dimensions "[1] a lack of hesitancy about using a newly encountered linguistic element, [2] a willingness to use linguistic elements perceived to be complex or difficult, [3] a tolerance of

possible incorrectness or inexactitude in using the language, and [4] an inclination to rehearse a new element silently before attempting to use it aloud" (p. 8). A six-point Likert scale, between „strongly disagree" and „strongly agree" is used. A few examples of questions include: *I don't like trying out a difficult sentence in class; In class, I prefer to say a sentence to myself before I speak; and I prefer to follow basic sentence models rather than risk misusing the language.*

Risk-Taking Questionnaire. An example of assessing risk-taking behavior in a general situation is the Risk-Taking Questionnaire, which was adopted and modified by Sheperd from the Eysenck Personality Questionnaire (Shepherd, 2009). The Eysenck Personality Questionnaire is a globally used personality scale developed by Eysenck and Eysenck in 1972. Their original idea was to investigate the relationship between extroversion and second language proficiency (Ely, 1986). The Risk Taking Questionnaire is one of the free personality questionnaires available online. Scoring is also available online and it is instant. The online Risk-Taking Questionnaire consists of 31 items. Test takers simply need to click the appropriate box of *Yes*, *Maybe*, and *No*, and vocabulary is simple. Because the target population is adults, some questions are not directly appropriate for young ELLs.

Summary of Focus on Risk-Taking Behavior

The overall definition of risk-taking behavior includes decision making for uncertainty and tolerance for their outcomes. Risk-taking is not a fixed trait and can be affected by some factors such as the situation, the social setting, and personal characteristics. On the premise that L2 learning involves taking some risks, findings indicated that relationships between risk-taking behavior and successful learning of another language are dependent. Some studies have

concluded that risk-taking and L2 learning are positively correlated in oral communication competency.

What most studies have focused on, however, are the impacts of risk-taking on the proficiency in L2 in general or oral communications. With a shift of focus from the segmental level to the broader suprasegmental level to enhance communicative competencies, investigations on the relationship between risk-taking and foreign accent modification in particular are in need.

Purpose of the Study

The purpose of this study was to investigate the possible association between the ability to change speaking patterns by applying word emphasis and risk-taking behaviors of the Japanese ELLs in the scope of foreign accent modification. The investigation was conducted through answering the following questions:

(a) Is there a difference in the acoustic measurements of vowel duration, F0, and intensity of the pre-determined target words in R1 between the Japanese ELLs and NESs?

(b) Is there a difference in the acoustic measurements of vowel duration, F0, and intensity of the pre-determined target words between the Japanese ELLs‟ R1 and R2?

(c) Is there a relationship between the listeners‟ ratings of comprehensibility and foreign accentedness and the Japanese ELLs‟ R1 and R2? and

(d) Is there a relationship between the scores on the risk-taking questionnaire and the changes the Japanese ELLs make from R1 to R2 measured by both computer and listeners?

Research Hypothesis

Research Question (a)

The NESs‟ mean differences of the vowel duration, F0, and intensity of the target words in R1 will be significantly longer, higher, and greater respectively than the Japanese ELLs‟. The different language systems between Japanese and English, (i.e., a mora-timed vs stress-time respectively) are presumed to be the contributor to the differences.

Research Question (b)

There will be significant increases in mean differences of the vowel duration, F0, and intensity from R1 to R2. The instruction to apply emphasis for R2 is attributed to the possible increases. Also, application of emphasis is not language-specific when demonstrating feelings (Shen, 1990; Wennerstrom, 2001). Emotional expression is personal (Garn-Nunn & Lynn, 2004), and their communicative intent will be demonstrated by increasing vowel duration, raising pitch, and increasing loudness.

Research Question (c)

The listeners‟ ratings will demonstrate an increase in comprehensibility and a decrease in foreign accentedness for R2. Word emphasis that the Japanese ELLs possibly apply for the second reading will help create a rhythm in an utterance, which will provide an important cue for the listeners to attend to.

Research Question (d)

There will be a significant positive correlation between the scores of the risk-taking questionnaire and the changes that the Japanese ELLs make from R1 to R2 measured by the

three acoustic elements and the listeners‟ ratings. Those who score higher on the risk-taking scale will demonstrate larger mean differences of R1 and R2 in the three elements as well as in the listeners‟ ratings, confirming that good language learners will have tolerance for risk (Rubin, 1975).

CHAPTER III

METHODOLOGY

The purpose of the current study was to investigate possible associations among application of word emphasis during reading and risk-taking behaviors of the Japanese ELLs as they pertain to the scope of foreign accent modification through determining the following: (a) whether a difference exists in the acoustic measurements of vowel duration, fundamental frequency, and intensity of the target words in R1 between the Japanese ELLs and NESs; (b) whether a difference exists in the three acoustic elements of the target words in R1 and R2 of the Japanese ELLs; (c) whether a relationship exists between the listeners‟ ratings of comprehensibility and foreign accentedness and R1 and R2 of the Japanese ELLs, and (d) whether a relationship exists between the scores on the risk-taking questionnaire and the application of word emphasis as measured by the three acoustic elements and the listeners‟ ratings for the Japanese ELLs. This chapter contains information on participants, instruments (including both quantitative and qualitative measures), procedures, and data analysis.

Participants

Speakers

Japanese ELLs. Thirty Japanese individuals (15 males and 15 females) were selected from an original pool of 41 (18 males and 23 females) who were born and raised in Japan and currently live in Kansas. The selection was based on fulfilling both the criteria of the length of the US residence (longer than 12 months); and age (older than 18 years and younger than 42). The age in the selected group ranged from 21 to 41 years with a mean age of 26.7 years for males and 32.8 years for females. Their length of US residence ranged from 1:00 (years:

months) to 15:07 with a mean length of 3:02 for males and 6:11 for females. More demographics of the Japanese ELLs from questionnaire responses are provided in Appendix A. All were paid $10 for their participation.

NESs. Thirty NESs (15 males and 15 females) who currently live in Kansas and were also age-matched with the Japanese ELLS within a 2-year difference, were selected from the original pool of 45 individuals (21 males and 24 females). All were raised in the Central Midland region: Kansas (28 participants), Missouri (1), and northern Oklahoma (1). This provided homogeneity in dialect (Garn-Nunn & Lynn, 2004). Their ages ranged from 21 to 42 years with a mean age of 26.9 years for males and 32.6 years for females. All were paid $10 for their participation.

Listener-Raters

Seven native speakers of American English recruited from the Department of Communication Sciences and Disorders at Wichita State University in Wichita, Kansas, served as listener-raters. They were all female graduate students in speech-language pathology who had completed a basic phonetics course. Their mean age was 31.3 years. Homogeneity in dialect was also obtained because six were from Kansas and one was from Colorado, both in the Central Midland region. None of them had any experience of learning the Japanese language; their exposure to Japanese was minimal. All passed a hearing screening at 20 dB HL from 500 Hz to 4000 Hz. They were paid $10 per hour.

Instruments

Two approaches were used to collect data for this study. These approaches were categorized as (1) quantitative, which included the scenario, the target words, the risk-taking questionnaire, and the listener-rater‟s assessment form, and (2) qualitative, which included questionnaires for Japanese ELLs, NESs, and listener-raters, participant interviews, and participant observations.

Quantitative Measures

Scenario. The reading material for the speakers was a scenario consisting of ten short English sentences (see Appendix B) presented as a voicemail phone message to a friend. This form was selected, because it is a monologue, which does not require another communicating partner. Among the ten sentences, six had one target word each (shown in bold), which was anticipated to be emphasized using duration, pitch, or loudness changes to show the speakers‟ feelings. The rest of the four sentences were added to create a situation as natural as possible. The target words in the actual narrative provided to the speakers were not in bold so that the participants would not be influenced by any additional marks.

Role-play was also applied in the scenario because role-play has been claimed to be one of the most effective activities to help NNSEs speak English with less anxiety when they realize that it is simply a role that they are playing. Role-play provides NNSEs an opportunity to take on another persona (Hilleson, 1996). Also, it facilitates the use of technical rules of English such as grammar, pronunciation, and the appropriate non-verbal rules of conversation in a specific setting. More importantly, it helps shift "the process from that of role play to that of real life" (Donahue & Parsons, 1982, p. 364).

Target Words. Pre-determined target words of *good, hot, fun, best, six,* and *big* were used as anticipated words for emphasis when the participants read the scenario demonstrating their feelings. The vowels of these words were used for acoustical measurements. The use of the target words was also to reduce the challenges in making acoustical measurements of the words that each participant selected for emphasis. The words were all adjectives in consonant-vowel-consonant (and consonant) combinations. Adjectives were selected, because adjectives or adverbs are two of the evaluative words used as intensification devices in discourse (Wennerstrom, 2001). Also, these words are content words (i.e., information word) that generally receive more emphasis in sentences than other content words of nouns, verbs, and adverbs do (Celce-Murcia, Brinton, & Goodwin, 1996).

A pilot study to measure the validity of predictive emphasis was conducted by the investigator using eight participants (four ELLs and four NESs). Frequency of the target-word choice for emphasis was obtained with 93% agreement by a second rater. Following the primary data analysis based on the listeners‟ assessment, the target word *big* was eliminated from the study because of the low frequency use for emphasis (34%). Refer to Table 2 in Results for the details.

Both voiced and voiceless stops and fricatives were used in the initial and final position of the target words, because they provide clearer cues to determine the segment boundaries in the measurement of vowel duration. Voiceless consonants are the results of open vocal folds (i.e., voicing refers to the vibration of the vocal folds which produces voicing energy) with no oral constriction (Pickett, 1999). Therefore, "[v]irtual silence may occur for voiceless stop" (p. 203) in the waveform, resulting in a gap to illustrate relatively clear boundary differences between phonemes. In contrast, voiced stops "may have a low-energy interval" (p. 203) because of

voicing energy, which is still visible in the waveform (Kent, Dembowski, & Lass, 1996). In addition, voiceless stops or fricatives least strongly affect the vowels within syllables (Baken & Orlikoff, 2000). Although the only exception was /n/ in *fun*, identifying the final nasals is not difficult because they provide an abrupt intensity change in the low frequencies (Peterson & Lehiste, 1960).

The more detailed definition of vowel onset and offset is discussed later in this chapter in Definition of Vowel Onset and Offset in the Data Analysis section. Validity of the target-word choice for the acoustic measurement of vowel duration was obtained by identifying vowels in the boundary. There was 100% agreement of the target word choice of the investigator and an expert second rater in the Department of Communication Sciences and Disorders at Wichita State University in blind comparisons.

Risk-Taking Questionnaire. The risk-taking questionnaire consisted of 11 combined questions (see Appendix C). The six questions (*a, b, c, d, f, g*) were slight adaptations of a previously published questionnaire (Ely, 1986). The only modification made was the change of "in class" to "in a group," so that it fit the current status of all the Japanese ELLs. In addition, three questions from another published questionnaires (Eysenck Personality Questionnaire, developed by Eysenck and Eysenck in 1972) and modified by Shepherd (2009) were selected and modified slightly to fit the domain-specific situation of L2 learning (question *i, j, k*). Question *h* was adopted from a study of ELLs" pronunciations (Huang, 2010). Question *e* was added as a cooperation question. The 6-point Likert scale of Ely"s questionnaire was employed for rating of the all questions. The scales were strongly agree (1), moderately agree (2), slightly agree (3), slightly disagree (4), moderately disagree (5), and strongly disagree (6).

The combined questionnaire was intended to examine the risk-taking behavior in speaking from a variety of aspects including grammar, pronunciation, vocabulary, and situation. Concurrent validity of the combined questionnaire was obtained by the comparison with the Ely questionnaire, Pearson product-moment correlation coefficient (r) = .90. Additionally, the word "risk-taking" did not appear on the questionnaire to avoid giving any psychological influences to the participants. Moreover, the questionnaire was not translated into Japanese.

Listener-Rater's Assessment Form. The Listener-Rater‟s Assessment Form (see Appendix D) consisted of three tasks as shown in the Instructions for Listeners (see Appendix E). The first task was the identification of the exact word the listeners heard as emphasized. They were to write the word, or leave it blank if they determined no word was emphasized. The second task was the rating of comprehensibility, which was assessed using a 4-point Likert scale: 1 (Very comprehensible), 2 (Comprehensible), 3 (Somewhat incomprehensible), and 4 (Very incomprehensible). Comprehensibility rather than intelligibility was selected as a measuring variable, because comprehensibility refers to an overall rating of easiness for a listener to understand an utterance of a speaker. Intelligibility, in contrast, refers to a listener‟s segmental understanding of a speaker‟s utterance (Derwing & Munro, 2005). The third task was the degree of foreign accentedness, which was also assessed using a 4-point Likert scale: 1 (No foreign accent), 2 (Some foreign accent), 3 (Strong foreign accent), and 4 (Extremely strong foreign accent).

The Likert scale was modeled from a 4-point scale description by Chang (1994) where he evaluated 4-point and 6-point scales in relation to reliability and validity. The 4-point small scale steps were selected because the main purpose of the listeners‟ evaluation was to determine

degree of comprehensibility from incomprehensible to comprehensible, and the degree of foreign accent, heavy accent or no accent. Chang concluded that additional scale options, i.e., 5, 6, and more, might not enhance reliability although they might increase statistical correlations. Garland (1991) proposed a scale without a mid-point, (i.e., an even number scale), over an odd number scale. He posited that an even number scale requires respondents to make a definite selection rather than choose a neutral position on a scale.

Qualitative Measures

Questionnaires, participant interviews, and participant observations were used as the three aspects of "data triangulation" to improve credibility of the qualitative data being collected (Cresswell, 2007). These three different, yet converging, sources of information allowed the investigator to develop a more complete understanding of the processes that were occurring for the participants during their performance of the tasks that were measured for the quantitative portion of the study.

Questionnaire for Japanese ELLs. The questionnaire for Japanese ELLs (see Appendix F) was constructed by the investigator to obtain biographic information such as age, gender, and length of residence in the US. Other questions were prepared to learn about English-language experiences and use. The questionnaire was not translated into Japanese.

Questionnaire for NESs. The questionnaire (see Appendix G) was developed by the investigator to obtain biographic information and their second language experiences.

Questionnaire for Listener-Raters. The questionnaire (see Appendix H) was developed to obtain biographic information and their second language experiences.

Interview Questions. Lambert (1991) claimed that in language-related research, qualitative approaches provide more advantages than quantitative approaches by evaluating the fundamental processes that take place in learners‟ minds and transpire in the situations. Therefore, interview questions for the Japanese ELLs and NESs were developed to gather insightful thoughts and impressions about L2 learning, application of word emphasis, smooth communication, and their own risk-taking behaviors.

The semi-structured interview for the Japanese ELLs consisted of the following questions and planned prompts:

1. Did you read the scenario differently from the first time to the second time? If so, how? (Regarding words, ways, degree of emphasis, & others)
2. How do you observe the ways that the Americans and Japanese express their feelings in general? (Regarding intonation, body language, & others)
3. Is it easy for you to say something with your feelings/emphasis in English in your daily communication? (Regarding personality traits, experiences, & others)
4. What was the affect of the role-playing in reading the scenario?
5. What are your goals for your communicative English? (e.g., intelligible English, native-like English, & others)

The semi-structured interview for the NESs consisted of the following questions and planned prompts:

1. How did you want to read the scenario? (Regarding words, ways, and degree of emphasis; & others) How do you know where to put emphasis and where did you learn it?
2. Do you generally use different level of emphasis depending on words (e.g., positive vs. negative), closeness (e.g., friends vs. stranger), and social status (e.g., students vs. professor)? Do you use body language with expressions?
3. How does rhythm of sentences created by intonation or emphasis help speakers and listeners?
4. Do you consider yourself shy? Do you feel shy to express yourself? What was the affect of the role-playing in reading the scenario?

Although the prompts were planned for the both groups, some questions were open-ended to obtain the speakers‟ true voices without any influences by the investigator. Also, unscheduled prompts were used to elaborate or clarify participants‟ responses (Plexico, Manning, & DiLollo, 2005).

Observation. The speakers were observed by the investigator during the data collection process in order to collect information regarding the ways they communicate. The investigator made extensive field notes regarding participants‟ facial expressions, body language, and general behavior during recording.

Procedures

Preliminary

Prior to the instruction for data collection, the consent form was signed by the Japanese ELLs (see Appendix I) and NESs (see Appendix J). The consent forms included information regarding the purpose of the study, reason for selection as a participant, and the procedure. Although the consent form for the Japanese ELLs was not translated into Japanese, questions regarding the description were answered by the investigator in Japanese. The seven native listener-raters signed the consent form (see Appendix K) prior to their assessment as well. They also filled out the questionnaire at the same time.

Data Collection

Recordings. Both speakers of the Japanese ELLs and NESs were assessed only once for between 30 and 40 minutes individually. Each speech token was recorded using a Marantz PMD661 and a SHURE PG81 XLR microphone located approximately 20 cm from the speaker‟s mouth in a sound-treated room at Wichita State University. Occasionally, a recording was made in an altered quiet room, although not soundproof, for the convenience of some speakers. The tokens were sampled at a rate of 48 kHz with 24 bit quantization.

First, the speakers were instructed to read the scenario as they would generally do in that particular situation, playing the role of Kim. Following approximately a one-minute preparation time when the speakers could study and rehearse the narrative, one practice run was made without recording. No feedback was provided.

Then, the Japanese ELLs only, performed the second task of reading the same scenario with the instruction “to express yourself to thank your friend Jack for the wonderful time you had at the party.” The investigator demonstrated the application of emphasis by modeling emphasis

on the word „wonderful‟ with longer duration, higher pitch, and increased intensity. The investigator reminded the speakers again that this was a role-play. Although about one minute was provided to rehearse the second time as well, no practice run was made and no feedback was given. Their speech samples were recorded exactly the same way as the first reading. All recorded files were transferred from the digital recorder to a Sony VAIO laptop for storage and later analyses.

Additionally, Japanese was a main language of communication with the Japanese ELLs because the investigator‟s L1 is also Japanese. Instructions about how to read the scenario, however, were provided in English in order to make the research condition equal for the both groups. Moreover, an electronic dictionary was made available throughout the data collection. A few Japanese ELLs used it.

Questionnaires. Filling out the questionnaires followed the second recording for the Japanese ELLs and the first recording for the NESs. The Japanese ELLs filled out the risk-taking questionnaire at the same time. The investigator was available for any questions the Japanese ELLs had because the questionnaires were not translated into English.

Interviews. The last task for the both the Japanese ELLs and NESs was responding to the interviews based on the interview questions. Japanese was a language of communication with the ELLs because the main purpose of the interview was to obtain some feedback. It was anticipated that more straightforward and honest responses would be obtained in Japanese. Responses were written down by the investigator as each question was responded to, with verbatim quotes noted as well as general comments. Completing the questionnaires and

interview were purposefully placed after recording in order to avoid any possible influences on the participant‟s performance during the quantitative tasks.

Observation. The speakers were observed by the investigator throughout the data collection process. Their facial expressions and body language during recording were observed closely and extensive field notes were taken.

Identification of Words Used for Emphasis Based on Acoustic Information

Identification of the emphasized words was conducted by the investigator to confirm whether or not the pre-determined target words were selected for emphasis application. A pitch contour displayed in the spectrogram was used as a primary reference of examination because pitch is claimed to be a stronger cue for the presence of emphasis than duration or intensity (Lehiste, 1970; Wennerstrom, 2001). Duration and intensity of the vowels were used as secondary references.

Intra-Rater Reliability. Intra-rater reliability of the emphasized-word identification was obtained by randomly selecting 10% of the same tokens for each word group and each speaker group and presented a second time. Cronbach‟s coefficient alpha for overall reliability was .98.

Inter-Rater Reliability. Inter-rater reliability of the emphasized-word identification was determined by having an expert second-rater in the Department of Communication Sciences and Disorders at Wichita State University identify 10% of the tokens that were randomly selected. Cronbach‟s coefficient alpha for overall reliability was .94.

Listeners‟ Rating

The listener-raters were first provided an Instruction for Listeners sheet to understand their tasks. They then received training to identify emphasized words, listening to the samples developed specifically for this purpose and recorded by a female native speaker of American English in the Department of Communication Sciences and Disorders at Wichita State University. The reference included three sets of the same four sentences with emphasis on different words and varied pitch levels. Feedback was given to the listeners in order to calibrate their ratings. The speech tokens were randomly presented in a quiet room. Each token was played twice; a third was played upon request. During the assessment, one set of the training samples was played at every 60 speech token as a reference for varied emphasis. The assessment was divided into three days, about two hours each time, having all the listeners rate the tokens at the same time.

Intra-Rater Reliability. Intra-rater reliability was obtained by having the listener-raters rate 10% of the same tokens a second time. The tokens were randomly selected and presented at the end without the listeners‟ knowledge. Cronbach‟s coefficient alpha for each of seven listeners was consistent as follows: .87, 1.00, .75, .83, .91, .74, and .82.

Inter-Rater Reliability. Inter-rater reliability between the seven listeners was determined using Cronbach‟s coefficient alpha for emphasized words, comprehensibility, and foreign accentedness. Inter-rater reliability for emphasized word was .94, .90 for comprehensibility, and .96 for foreign accentedness.

Scoring

Listener-Raters' Assessment. Emphasized words and ratings of comprehensibility and foreign accentedness of the Japanese ELLs' R1 and R2 assessed by the listeners were compiled by the investigator. Refer to Table 16 in Results for the means and standard deviations of comprehensibility and foreign accentedness ratings.

Risk-Taking Questionnaire. Responses of Japanese ELLs' risk-taking questionnaire were compiled manually. The ratings of Question *d, h, j,* and *k* were reversed for counting the total scores. Refer to Figure 5 for the raw scores.

Data Analyses: Quantitative

Acoustic Analysis

The target words of *good, hot, fun, best, six,* and *big* were extracted from each token using PRAAT software first (Boersma & Weenink, 2010). The vowels of /ʊ/, /ɑ/, /ʌ/, /ɛ/, and /ɪ/ in each target word were then measured for duration (in ms), mean F0 (in Hz), and mean intensity (in dB). Standard settings of PRAAT were used for spectrogram range (0-5000 Hz), pitch range (75-500 Hz), and intensity range (50-100 dB).

Definition of Vowel Onset and Offset

Vowel boundaries of the target words were segmented based on the criteria described by Peterson and Lehiste (1960) using both waveform and spectrographic display.

Vowels in the Context of Voiced Stops. Vowel onset was defined at the onset of periodicity at zero crossing after the release burst in the waveform and onset of voicing of the

first formant in the spectrogram. Vowel offset was determined at the reduction of amplitude in the waveform and at the cessation of higher formants in the spectrogram.

Vowels in the Context of Voiceless Stops. Vowel onset was not defined because no voiceless stops were used for the initial consonants of the target words. Vowel offset was defined as the point of amplitude reduction in the waveform and abrupt cessation of energy in the spectrogram. Refer to Figure 1 for the definition of vowel offset.

Vowels in the Context of Voiceless Fricatives. Vowel onset was measured from the cessation of the noise in the periodic wave of the waveform and onset of voicing in the region of the first formant in the spectrogram. Vowel offset was defined at the point that the onset of random noise after a few low harmonics in the waveform and the cessation of low formants in the spectrogram. Refer to Figure 1 for the definition of vowel onset.

Vowels in the Context of Nasal. Vowel onset was not defined because no nasal was used for the initial consonant of the target words. Vowel offset was defined as the point that abrupt intensity change in the low frequency occurs in the spectrogram.

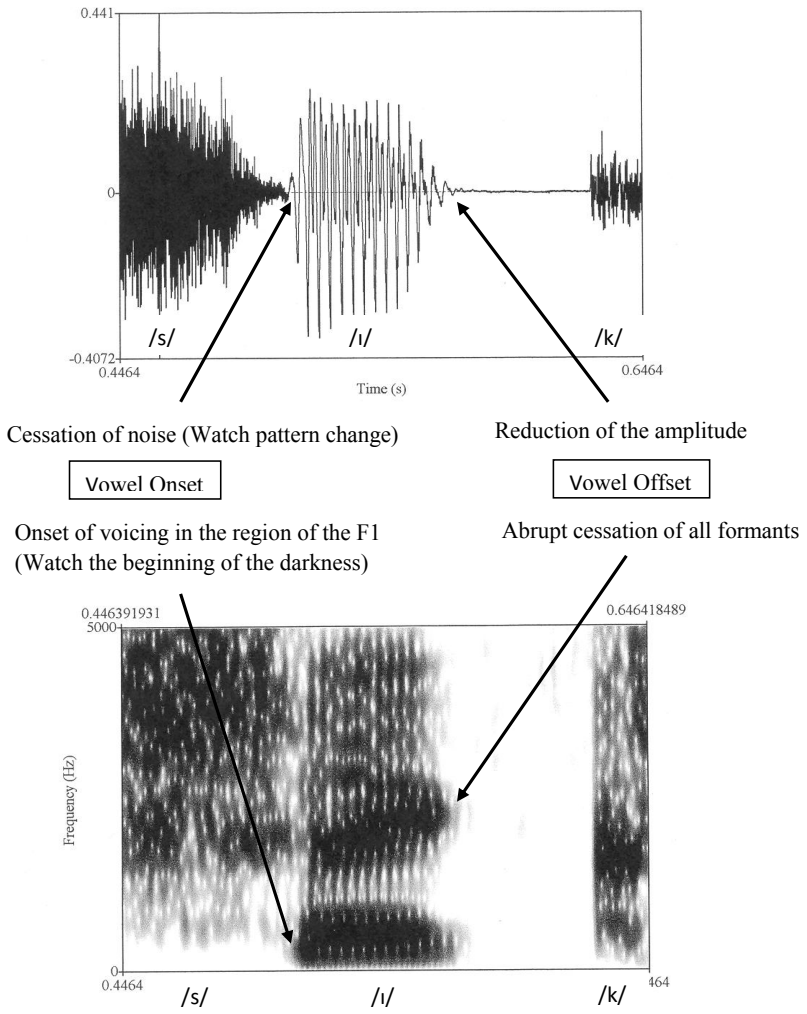

Figure 1. Vowel boundaries of the target word *six*.

Intra-Rater Reliability. Intra-rater reliability for the PRAAT measurements was obtained by remeasuring 10% of the tokens for vowel duration, F0, and intensity. The tokens were randomly selected from each target word in Japanese ELLs‟ R1 and R2, and NESs‟ R1. Cronbach‟s coefficient alpha for overall duration was .998, 1.00 for overall F0, and .997 for overall intensity. Cronbach‟s coefficient alpha for vowel duration, F0, and intensity of each target word is listed below:

- /ʊ/ in *good*: .989, 1.000, .994 (vowel duration, F0, intensity respectively);
- /ɑ/ in *hot*: .998, 1.000, .995;
- /ʌ/ in *fun*: .993, 1.000, .999;

- /ɛ/ in *best*: .999, 1.000, .998; and
- /ɪ/ in *six*: .994, 1.000, .997.

Inter-Rater Reliability. Inter-rater reliability for the PRAAT measurements was made by having an expert second rater at Wichita State University remeasure 10% of the tokens for vowel duration, F0, and intensity. Refer to Appendix L for instruction provided. The tokens were randomly selected from each target word in Japanese ELLs‟ R1 and R2, and NESs‟ R1. Cronbach‟s coefficient alpha for overall duration was .99, 1.00 for F0, and .99 for intensity. Cronbach‟s coefficient alpha for vowel duration, F0, and intensity (in this order) for the vowel of each target word is listed below:

- /ʊ/ in *good*: .992, 1.000, .987;
- /ɑ/ in *hot*: .997, 1.000, .996;
- /ʌ/ in *fun*: .856, .999, .906;
- /ɛ/ in *best*: .997, 1.000, .962; and
- /ɪ/ in *six*: .988, 1.000, .997.

Statistical Analysis

All statistical analyses were performed using PASW (Predictive Analytics Software) Statistics 18. A two-way multivariate analysis of variance (MANOVA) was used to analyze vowel duration, F0, and intensity of the target words in R1 across gender by speaker groups (Japanese ELLs and NESs). A two-way repeated-measures analysis of variance (ANOVA) was conducted to assess differences in vowel duration, F0, and intensity of the speaker groups and between gender. Relationships between the listeners‟ comprehensibility and foreign accentedness and the ELLs‟ R1 and R2 were measured by using two-way repeated-measures of

ANOVA. A correlation matrix was used to examine the relationships between risk-taking behavior and the three acoustic measurements and listeners‟ ratings.

Data Analysis: Qualitative

Questionnaires for demographic information and language experiences were compiled by the investigator. Questionnaire responses, notes from interviews, and field notes from observations were examined to determine if they could be categorized into general themes or "broader recurring themes" (Plexico, Manning, & DiLollo, 2005, p. 9). Recurring themes emerged from the participants‟ responses. Although interview questions from the Japanese ELLs and NESs were not exactly the same, shared comments and observation were explored for each theme. An approach similar to the "constant comparative" method of analysis proposed by Bogdan and Biklen (1998) was used to analyze these qualitative data and extract recurring themes that could be helpful in understanding the processes underlying participants‟ performance of the verbal tasks. In this approach, all data from the interviews, observations, and questionnaires were considered together, with the investigator using multiple readings of these to develop an understanding of the data as a whole. Following this, the investigator identified specific units of information that were relevant to the understanding of participants‟ thoughts and impressions about L2 learning, application of word emphasis, smooth communication, and their own risk-taking behaviors. These units of information were then grouped together into meaningful categories, with the categories then grouped into broader themes.

CHAPTER IV

RESULTS

The current study was designed to investigate whether an association exists between the application of word emphasis and risk-taking behaviors of the Japanese ELLs through (a) comparing acoustic measurements of vowel duration, F0, and intensity of the target words in R1 of the Japanese ELLs and NESs, (b) comparing the three acoustic measurements of R1 and R2 of the Japanese ELLs, (c) examining a relationship between the native listeners‟ ratings and the Japanese ELLs‟ readings, and (d) examining a relationship between the Japanese ELLs‟ scores of risk-taking questionnaire and both the listeners‟ ratings and the three acoustic measurements.

Quantitative and qualitative results are discussed separately, starting with the statistical analyses of quantitative data at first.

Quantitative Results

The First Research Question: R1 Comparison between Japanese ELLs and NESs

The first question was to determine whether or not there was a difference in vowel duration, F0, and intensity of the target words in R1 across the groups (Japanese ELLs and NESs).

The First Statistical Analyses

A two-way MANOVA was conducted to evaluate the effects of two groups and gender on the three dependent variables of vowel duration, F0, and intensity of the target words in R1. Table 1 contains the descriptive statistics of the three dependent variables for the groups and gender.

No significance was found for main effect of the groups on the three variables, Wilks‟s Λ = .91, F (3, 54) = 1.71, $p > .05$, the multivariate $\eta^2 = .09$. There were no significant effects for the groups and gender interaction either, Wilks‟s Λ = 1.00, F (3, 54) = .02, $p > .05$, the multivariate $\eta^2 = .001$. The null hypothesis was retained and research hypothesis was rejected, indicating the two groups did not differ significantly in vowel duration, F0, or intensity.

A significant main effect of gender, however; was found, Wilks‟s Λ = .19, F (3, 54) = 75.46, $p < .05$, the multivariate $\eta^2 = .81$. The ANOVA on the dependent variables were conducted as follow-up tests to the MANOVA. The ANOVA for F0 only was found to be significant, F (1, 56) = 178.83, $p < .05$.

TABLE 1

DESCRIPTIVE STATISTICS OF VOWEL DURATION, F0, AND INTENSITY OF THE TARGET WORDS IN R1 FOR JAPANESE ELLS AND NESS

Variables		Males		Females		Total	
		Japanese	American	Japanese	American	Japanese	American
Duration (ms)	M	102.66	95.57	107.00	100.21	104.83	97.89
	SD	25.34	16.60	22.18	16.59	23.50	16.48
F0 (Hz)	M	141.08	141.11	232.66	229.55	186.87	185.33
	SD	29.52	25.73	30.92	15.11	55.24	49.52
Intensity (dB)	M	76.20	76.42	75.97	76.17	76.08	76.29
	SD	.55	.55	.63	.44	.59	.51

Note: n = 15 in each gender group.

After the first statistical analyses, the actual words used for emphasis were identified based on the acoustic information (pitch contour, duration, and intensity). The results, which are

presented in Table 2, indicated that the specified target words were not selected for emphasis by all speakers. Refer to Appendix M for details.

TABLE 2

FREQUENCY OF THE TARGET-WORD SELECTION IN R1 BASED ON THE ACOUSTIC INFORMATION FOR THE JAPANESE ELLS AND NESS

Gender	Groups	Good	Hot	Fun	Best	Six
Males	Japanese	5	11	5	6	14
	American	3	13	2	6	13
Females	Japanese	5	9	8	6	14
	American	12	13	3	13	14

Note: n = 15 possible in each group.

The Second Statistical Analyses

Once the frequency of the target-word use was determined, a two-way MANOVA was conducted again to evaluate the effects of two groups and also gender and group interaction on the three dependent variables. Only those participants who selected the target words for emphasis were used this time.

No significant main effect of the groups nor for groups and gender interactions were found. Although significant main effect of gender was found for each target word, the results of the ANOVA as follow-up indicated that F0 overall was significantly different for genders. Refer to Table 3 for the details. The null hypothesis was retained and the research hypothesis was not supported. Tables 4 to 8 summarize the descriptive statistics of each word for the two groups.

TABLE 3

TWO-WAY MANOVA TESTING EFFECTS OF GENDER AND GROUPS IN R1 FOR EACH TARGET WORD FOR JAPANESE ELLS AND NESS

Target Word	Source	Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Good	Group	.77	1.85	3	19	.17	.23
	Gender	.17	30.89	3	19	.00	.83
	Group X Gender	.73	2.36	3	19	.104	.27
Hot	Group	.88	1.81	3	40	.16	.12
	Gender	.260	37.89	3.	40	.00	.74
	Group X Gender	.99	.19	3	40	.90	.01
Fun	Group	.87	.58	3	12	.64	.13
	Gender	.35	7.42	3	12	.01	.65
	Group X Gender	.82	.87	3	12	.49	.18
Best	Group	.96	.33	3	25	.80	.04
	Gender	.29	20.07	3	25	.000	.71
	Group X Gender	.91	.84	3	25	.49	.09
Six	Group	.94	1.05	3	49	.38	.06
	Gender	.36	29.36	3	49	.00	.64
	Group X Gender	.93	1.26	3	49	.30	.07

TABLE 4

DESCRIPTIVE STATISTICS OF THE THREE VARIABLES IN R1
FOR THE JAPANESE ELLS AND NESS FOR TARGET WORD *GOOD*

Variables		Males		Females		Total	
		Japanese n = 5	American n = 3	Japanese n = 5	American n = 12	Japanese n = 10	American n = 15
Duration (ms)	M	70.10	94.80	95.48	79.26	82.79	82.37
	SD	13.40	3.28	26.08	14.41	23.68	14.35
F0 (Hz)	M	153.12	152.65	261.37	243.01	207.24	224.94
	SD	26.05	9.20	29.64	20.82	62.83	41.86
Intensity (dB)	M	76.77	76.92	75.98	76.66	76.38	76.72
	SD	.55	.48	.57	.47	.68	.47

Note: n = 15 possible in each gender group

TABLE 5

DESCRIPTIVE STATISTICS OF THE THREE VARIABLES IN R1
FOR THE JAPANESE ELLS AND NESS FOR TARGET WORD *HOT*

Variables		Males		Females		Total	
		Japanese n = 11	American n = 13	Japanese n = 9	American n = 13	Japanese n = 20	American n = 26
Duration (ms)	M	124.01	120.98	129.73	119.01	126.58	120.00
	SD	30.62	26.32	32.39	28.25	30.72	26.77
F0 (Hz)	M	141.04	145.36	232.16	244.09	182.04	194.73
	SD	29.41	26.09	28.86	35.81	54.49	58.96
Intensity (dB)	M	76.15	76.80	76.12	76.55	76.13	76.68
	SD	1.31	.60	.75	.45	1.07	.54

Note: n = 15 possible in each gender group

TABLE 6

DESCRIPTIVE STATISTICS OF THE THREE VARIABLES IN R1
FOR THE JAPANESE ELLS AND NESS FOR TARGET WORD *FUN*

Variables		Males		Females		Total	
		Japanese n = 5	American n = 2	Japanese n = 8	American n = 3	Japanese n = 13	American n = 5
Duration (ms)	M	90.59	92.65	93.72	103.90	92.52	99.40
	SD	18.11	22.49	20.17	25.16	18.69	21.93
F0 (Hz)	M	146.53	151.37	251.41	207.73	211.07	185.18
	SD	35.24	4.49	32.24	10.60	61.97	31.85
Intensity (dB)	M	76.57	77.09	76.88	76.31	76.76	76.62
	SD	.45	.26	1.45	.24	1.14	.49

Note: n = 15 possible in each gender group

TABLE 7

DESCRIPTIVE STATISTICS OF THE THREE VARIABLES IN R1
FOR THE JAPANESE ELLS AND NESS FOR TARGET WORD *BEST*

Variables		Males		Females		Total	
		Japanese n = 6	American n = 6	Japanese n = 6	American n = 13	Japanese n = 12	American n = 19
Duration (ms)	M	147.12	145.83	143.19	149.31	145.16	148.21
	SD	37.59	28.37	40.79	34.31	37.45	31.80
F0 (Hz)	M	148.04	147.78	235.03	216.38	191.53	194.72
	SD	35.16	25.33	31.26	26.69	55.41	41.55
Intensity (dB)	M	76.16	76.54	75.85	75.68	76.01	75.95
	SD	.73	.33	.66	.52	.68	.62

Note: n = 15 possible in each gender group

TABLE 8

DESCRIPTIVE STATISTICS OF THE THREE VARIABLES IN R1
FOR THE JAPANESE ELLS AND NESS FOR TARGET WORD *SIX*

Variables		Males		Females		Total	
		Japanese n = 14	American n = 13	Japanese n = 14	American n = 14	Japanese n = 28	American n = 27
Duration (ms)	M	71.08	65.56	59.23	56.01	65.16	60.61
	SD	21.12	12.73	17.57	15.26	20.00	14.67
F0 (Hz)	M	150.55	165.42	260.02	235.56	205.29	201.79
	SD	27.25	45.14	46.37	33.57	67.08	52.72
Intensity (dB)	M	75.98	76.33	75.61	75.98	75.78	76.14
	SD	.84	.64	1.51	1.48	1.21	1.15

Note: n = 15 possible in each gender group

The Second Research Question: The Japanese ELLs‟ R1 and R2

The second question was to determine whether or not there was a difference in vowel duration, F0, and intensity of the target words in the Japanese ELLs‟ R1 and R2.

Words Used for Emphasis in R2

Considering the results from the examination of the frequency of the target-word use in the first question, the frequency of the target-word selection for R2 based on the acoustic information was determined first. It was found that the target words were not selected for emphasis by all speakers as Table 9 demonstrates. Appendix N provides the details.

TABLE 9

FREQUENCY OF THE TARGET-WORD SELECTION IN R2 BASED ON THE ACOUSTIC INFORMATION FOR JAPANESE ELLS

Gender	Good	Hot	Fun	Best	Six
Japanese Males	7	11	8	10	14
Japanese Females	6	9	10	11	13

Note: n = 15 possible in each group.

Speech Tokens Used for the Second Research Question

Based on the results of the frequency examination on the target-word selection for emphasis in R2, those who chose the target words for emphasis in both R1 and R2, and no specific words for emphasis in R1 and the target words in R2 were used for the second research question.

Statistical Analyses

A two-way repeated-measures ANOVA was conducted to evaluate the effects of the readings (R1 and R2) and the three variables (vowel duration, F0, and intensity) on each target word within subjects and between gender. Differences were significant for the two readings for the three variables of the target words. The null hypothesis was rejected and the research hypothesis was supported for the overall results, indicating there was a significant increase in the three elements on the target words overall from R1 to R2. Table 10 summarizes the results of the two-way ANOVA tests for each target word. Figures 2, 3, and 4 illustrate the changes in each acoustic variable for the target words. Tables 11 to 15 summarize the means and standard deviations of R1 and R2 on the three elements for each target word.

TABLE 10

TWO-WAY ANOVA TESTING EFFECTS OF READINGS AND THREE VARIABLES ON THE TARGET WORDS OF JAPANESE ELLS

Target Word	Source	Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Good	Readings	.60	16.14	1	24	.00	.40
	Readings X Elements	.33	6.17	2	6	.04	.67
	Readings X Gender	.99	.21	1	24	.65	.01
Hot	Readings	.81	3.98	1	17	.06	.19
	Readings X Elements	.74	2.88	2	16	.09	.27
	Readings X Gender	.99	.17	1	17	.69	.01
Fun	Readings	.26	36.32	1	13	.00	.74
	Readings X Elements	.21	22.24	2	12	.00	.79
	Readings X Gender	.98	.23	1	13	.64	.02
Best	Readings	.49	16.91	1	16	.00	.51
	Readings X Elements	.41	10.60	2	15	.00	.59
	Readings X Gender	1.00	.00	1	16	1.00	.00
Six	Readings	.60	16.14	1	24	.00	.40
	Readings X Elements	.54	9.84	2	23	.00	.46
	Readings X Gender	.99	.21	1	24	.65	.01

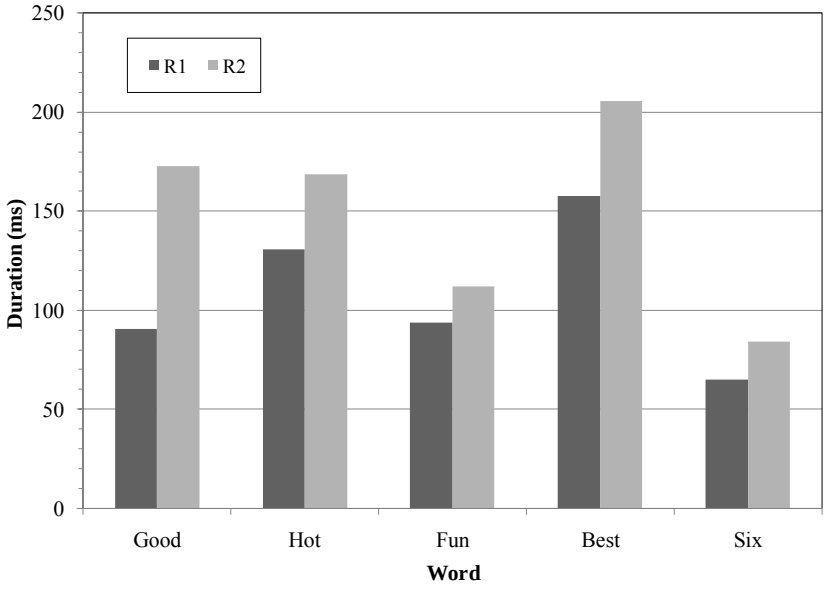

Figure 2. Duration differences from R1 to R2 in the target words for the Japanese ELLs.

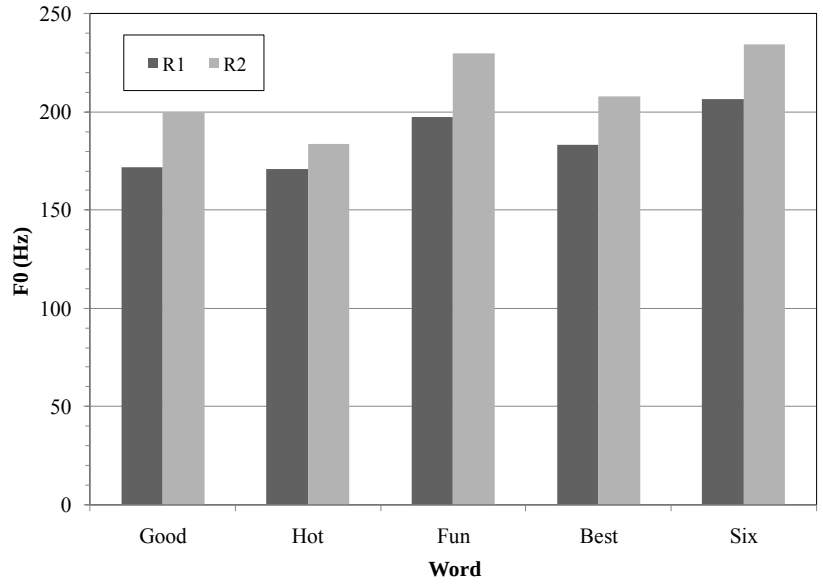

Figure 3. F0 differences from R1 to R2 in the target words for the Japanese ELLs.

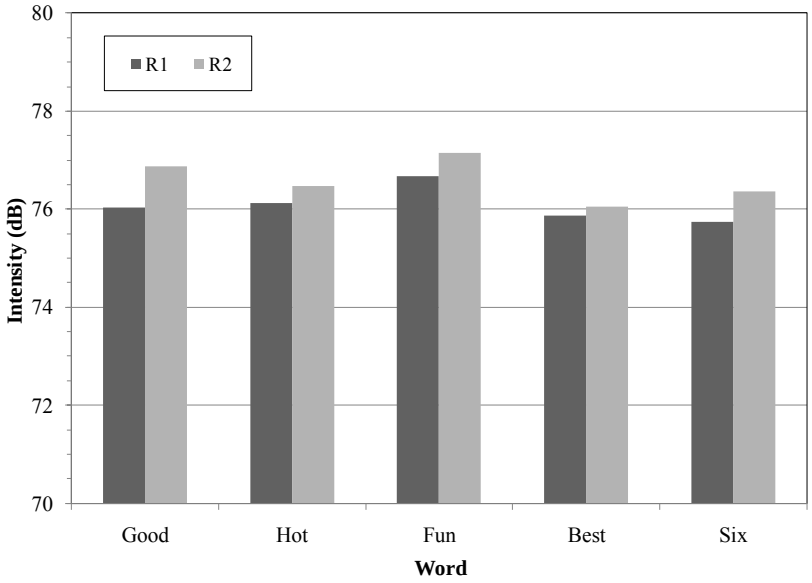

Figure 4. Intensity differences from R1 to R2 in the target words for the Japanese ELLs.

TABLE 11

DESCRIPTIVE STATISTICS OF R1 AND R2 ON THE THREE VARIABLES OF THE TARGET WORD *GOOD* FOR JAPANESE ELLS

Variables		Males (n = 6)		Females (n = 3)		Total (n = 9)	
		R1	R2	R1	R2	R1	R2
Duration (ms)	M	90.38	166.29	90.72	185.43	90.50	172.67
	SD	38.08	74.98	31.42	80.56	33.96	72.30
F0 (Hz)	M	137.82	161.09	239.93	276.68	171.85	199.62
	SD	29.47	43.69	33.37	22.57	58.55	68.27
Intensity (dB)	M	76.28	76.77	75.56	77.10	76.04	76.88
	SD	.46	.77	1.10	.31	.75	.65

Note: n = 15 possible for each gender

TABLE 12

DESCRIPTIVE STATISTICS OF R1 AND R2 ON THE THREE VARIABLES OF THE TARGET WORD *HOT* FOR JAPANESE ELLS

Variables		Males (n = 11)		Females (n = 8)		Total (n = 19)	
		R1	R2	R1	R2	R1	R2
Duration (ms)	M	124.33	161.55	139.77	178.46	130.83	168.73
	SD	30.72	47.16	30.28	47.32	30.69	46.68
F0 (Hz)	M	136.90	147.47	217.79	233.84	170.96	183.84
	SD	32.33	42.59	30.40	37.70	51.22	58.99
Intensity (dB)	M	76.11	76.39	76.16	76.60	76.13	76.48
	SD	1.32	1.09	.87	.68	1.13	.92

Note: n = 15 possible for each gender

TABLE 13

DESCRIPTIVE STATISTICS OF R1 AND R2 ON THE THREE VARIABLES OF THE TARGET WORD *FUN* FOR JAPANESE ELLS

Variables		Males (n = 7)		Females (n = 8)		Total (n = 15)	
		R1	R2	R1	R2	R1	R2
Duration (ms)	M	93.32	113.73	93.72	110.37	93.53	111.94
	SD	17.51	16.30	20.17	19.95	18.30	17.7
F0 (Hz)	M	135.39	165.19	251.41	286.32	197.26	229.80
	SD	34.61	34.55	32.24	46.17	67.99	74.09
Intensity (dB)	M	76.45	76.85	76.88	77.41	76.68	77.15
	SD	.47	.39	1.45	1.35	1.09	1.03

Note: n = 15 possible for each gender

TABLE 14

DESCRIPTIVE STATISTICS OF R1 AND R2 ON THE THREE VARIABLES OF THE TARGET WORD *BEST* FOR THE JAPANESE ELLS

Variables		Males (n = 9)		Females (n = 9)		Total (n = 18)	
		R1	R2	R1	R2	R1	R2
Duration (ms)	M	157.32	221.57	157.88	190.08	157.60	205.83
	SD	60.40	62.97	29.24	37.97	46.03	52.98
F0 (Hz)	M	145.57	169.90	220.87	245.63	183.22	207.77
	SD	34.23	41.48	35.99	36.84	51.59	54.47
Intensity (dB)	M	76.10	76.46	75.64	75.64	75.87	76.05
	SD	.61	.47	.79	.90	.73	.81

Note: n = 15 possible for each gender

TABLE 15

DESCRIPTIVE STATISTICS OF R1 AND R2 ON THE THREE VARIABLES OF THE TARGET WORD *SIX* FOR JAPANESE ELLS

Variables		Males (n = 13)		Females (n = 13)		Total (n = 26)	
		R1	R2	R1	R2	R1	R2
Duration (ms)	M	70.00	83.11	59.71	84.81	64.85	83.96
	SD	21.58	35.16	18.19	45.55	20.25	39.88
F0 (Hz)	M	147.76	179.42	265.45	289.79	206.60	234.60
	SD	26.20	42.27	43.40	48.80	69.53	71.89
Intensity (dB)	M	75.91	76.17	75.59	76.56	75.75	76.37
	SD	.83	.82	1.57	.57	1.24	.72

Note: n = 15 possible for each gender

The Third Research Question: The Japanese ELLs‟ Readings and Listeners‟ Ratings

The Third question was to determine whether or not there was a difference between the listener-raters‟ ratings of comprehensibility and foreign accentedness in the Japanese ELLs‟ R1 and R2.

Statistical Analyses

A two-way repeated-measures ANOVA was conducted with the factors of R1 and R2 and the dependent variables of the ratings of comprehensibility and foreign accentedness. The overall results indicated that the comprehensibility ratings increased from R1 to R2 by .07; the foreign accentedness ratings increased .09 as well. The results of the ANOVA indicated the difference of .07 in comprehensibility ratings is significant, Wilks‟s $\Lambda = .84$, $F(1, 29) = 5.63$, $p < .05$, multivariate $\eta^2 = .16$. The difference of .09 in the foreign accentedness ratings is also significant, Wilks‟s $\Lambda = .72$, $F(1, 29) = 11.43$, $p < .05$, multivariate $\eta^2 = .28$. The null hypothesis was retained and the research hypothesis was rejected, indicating no improvements were found in comprehensibility and foreign accentedness with the increased ratings for the variables. Moreover, no significant interaction among comprehensibility and foreign accentedness, the readings, and gender was found, Wilks‟s $\Lambda = 1.00$, $F(1, 28) = .06$, $p > .05$, multivariate $\eta^2 = .00$. The means and standard deviations for comprehensibility and foreign accentedness in the two readings are presented in Table 16.

TABLE 16

DESCRIPTIVE STATISTICS OF COMPREHENSIBILITY AND FOREIGN ACCENTEDNESS IN R1 AND R2 FOR JAPANESE ELLS

Variables		Males (n = 15)		Females (n = 15)		Total (n = 30)	
		R1	R2	R1	R2	R1	R2
Comprehensibility	M	1.97	2.03	1.73	1.81	1.85	1.92
	SD	.28	.30	.23	.26	.28	.30
Foreign Accentedness	M	2.56	2.64	2.28	2.39	2.42	2.52
	SD	.29	.30	.29	.30	.32	.32

The Fourth Research Question: Risk-Taking Scores and Acoustic Elements and Listeners‟ Ratings

The fourth question was to determine whether or not there was a relationship between the Japanese ELLs‟ scores on risk-taking questionnaire and the three acoustic variables, and the listeners‟ ratings.

Scores of the Risk-Taking Questionnaire

A frequency distribution of the risk-taking scores (n = 30, M = 37.8, SD = 6.57) is presented in Figure 5. Also, a *t*-test was conducted to compare the scores of females (M = 38.80, SD = 6.92) and males (M = 36.80, SD = 6.27). Scores of females and males were not significantly different in the scores on the risk-taking questionnaire, $t\ (28) = .83$, $p > .05$.

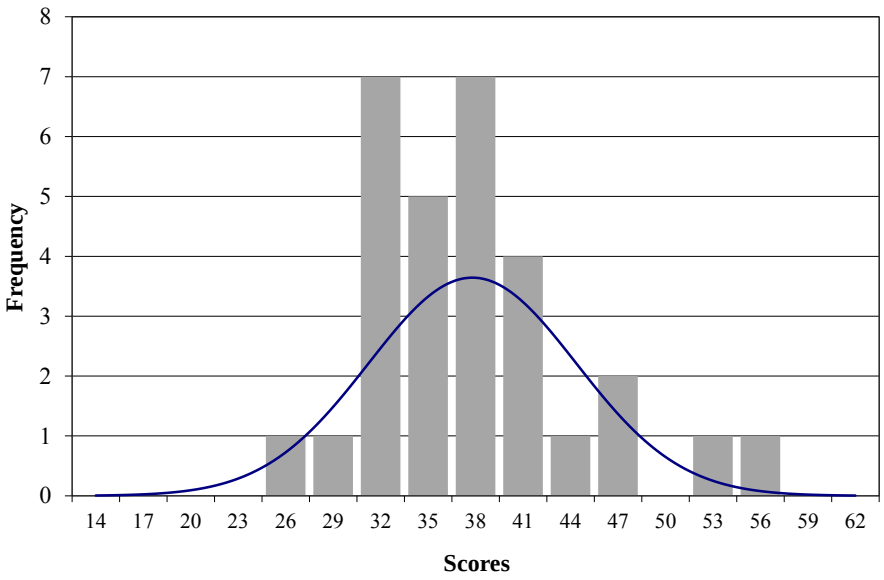

Figure 5. Frequency of the risk-taking questionnaire scores.

The Correlational Analyses

Risk-Taking Scores and the Three Acoustic Variables. The results of the correlational analyses between the risk-taking scores and the three acoustic variables are summarized in Table 17. No statistically significant correlation was found between risk-taking scores and the three variables for the all. The null hypothesis was retained and research hypothesis was rejected. Analyses for genders, however, indicated that the correlation between females and pitch was significant, $r\,(13) = .59$, $p < .05$.

TABLE 17

CORRELATIONS BETWEEN RISK-TAKING SCORES AND THE THREE ACOUSTIC VARIABLES (N=30)

	1	2	3	4
1. Duration	--			
2. F0	-.095	--		
3. Intensity	.285	.133	--	
4. Risk-Taking Scores	.145	.117	.178	--

Risk-Taking Scores and Listeners' Ratings. Table 18 presents the correlational analyses between risk-taking scores and listeners‟ ratings of comprehensibility and foreing accentedness. Correlations were not significant. Moreover, correlations for gender and listeners‟ ratings were not supported either. The null hypothesis was retained, and the research hypothesis was rejected.

TABLE 18

CORRELATIONS BETWEEN JAPANESE ELLS‟ RISK-TAKING SCORES AND THE LISTENERS‟ RATING (N=30)

	1	2	3
1. Comprehensibility	--		
2. Foreign Accentedness	.620**	--	
3. Risk-Taking Scores	.219	.353	--

**$p < 0.01$ level

Grouping of the Participants

The participants were devided into three groups: low-risk, scores = 26 – 33, (n = 9, 5 males and 4 females); mid-risk, scores = 34 – 39, (n = 12, 8 males and 4 females); and high-risk scores = 40 – 55 (n = 9, 2 males and 7 females). The cutoff point for three equal groups was caliculated by PASW. Correlational analyses were conducted to determine the relationships of the risk-taking groups and the acoustic variables and listeners‟ ratings for all.

Correlations between Risk-Taking Groups and Three Acoustic Variables. There were no statistically significant correlations between the risk-taking groups and the three acoustic variables except for one in the high-risk group. A Spearman correlation indicated a statistically significant correlation between the high-risk group and intensity, r (7) = .77, $p < .05$. No staristically significant correlations were found between gender in each risk-group and the acoustic variables.

Correlations between Risk-Taking Groups and Listeners' Ratings. There were no statistically significant correlations between risk-taking groups and the listeners" ratings. No staristically significant correlations were found between gender in each risk-group and the listeners" ratings.

Further Statistical Analyses

Correlations between Selected Tokens and Three Acoustic Variables. Those who chose the target words for emphasis in both R1 and R2, and no specific words for emphasis in R1 and the target words in R2 were used for conducting correlational analyses between risk-taking scores and the three acoustic variables. No significant correlations overall were found.

Correlations between Selected Tokens and Listeners' Ratings. The words used for emphasis based on the listeners" identifications were examined first. Among them, those who received more than 60% agreement by the listeners upon selection of the target words for emphasis in both R1 and R2, and no specific words for emphasis in R1 and the target words in

R2 were used for the correlational analyses (refer to Table 19). Results indicated that correlations overall were not significant between risk-taking scores and the listeners‟ ratings.

TABLE 19

FREQUENCY OF TARGET WORDS SELECTION FOR EMPHASIS BASED ON THE LISTENERS‟ RATINGS FOR JAPANESE ELLS

Good		Hot		Fun		Best		Six	
M	F	M	F	M	F	M	F	M	F
5	6	11	9	6	8	9	8	12	15

Note: n = 15 possible in each gender

Risk-Taking Groups and Use of English in Daily Life. The Japanese ELLs‟ questionnaire responses of their use of English at home and work/school was examined for the low- and high-risk groups. For the low-risk group, mean percentage of the English use at home was 28%, and 60% at work/school. Overall mean use of English was 44%. For the high-risk group, mean percentage of the English use at home was 50%, and 61% at work/school. Overall mean use of English was 56%.

Qualitative Results

The recurring themes that emerged from the three aspects of questionnaire, interviews, and observations are summarized in Table 20. The themes that emerged from these data were (1) strategies to enhance communication, (2) importance of emphasis in communication, (3) acquisition/learning of application of emphasis, and (4) personality trait and application of emphasis. These common themes are explored in the section that follows.

TABLE 20

RECURRING THEMES FROM RESPONSES AND OBSERVATION

1	Strategies to enhance communication • Application of word emphasis • Words for emphasis • Levels of emphasis • Use of body language and facial expression
2	Importance of emphasis in communication • Roles of emphasis • Expression comparison between Japanese and American
3	Acquisition/learning of application of emphasis • Methods • Use of English in daily life • Goal of communicative English
4	Personality trait and application of emphasis • Risk-taking • Role play

Strategies to Enhance Communication

The Japanese ELLs

According to the reports by the ELLs, when they read the scenario the second time, they applied emphasis on adjectives or descriptive words to show the importance of the words and convey the happy feelings in the communication.

They reported that they read the words slower, louder, and higher in pitch; and in a friendly manner. About half of the speakers considered *hot* as a negative word, and applied less emphasis, because they generally apply emphasis only on positive words.

No use of specific body language or facial expression was observed during recording. Some head movements including shaking and nodding, more frequent eye contact with the investigator, and hand movements to add expressions were observed during the interviews. The

overall use of the nonverbal communication, however, was less frequent and hand movements in particular were smaller compared to the NESs.

The NESs

The NESs reported that they apply emphasis on descriptive words, adjectives, "key words," "new words," "complimentary words," and "positive words" because they help convey "sincerity," "enthusiasm," "excitement," "energy," and "friendliness." They generally say these words longer, louder, more clearly, and "separately without mashing."

Hot was viewed as a negative word by some, and they reported reading it faster and with a lower pitch. Others, however, did not view *hot,* in the context in which it was used in the scenario, as being negative.

Some NESs reported that emphasis level shows their comfort level in communication. They stated that when they talk to a stranger or a person in a higher social status, they tend to be less expressive, because they need to show respect. Others, however, shared that they speak more clearly and slowly to strangers to make the communication more successful, because they don"t know each other"s speaking style.

Nonverbal communication was applied more frequently and in larger scale than the Japanese ELLs during recording and the interview. The NESs" facial expression was eloquent, e.g., grimaces when reading, "It was hot outside," and they smiled frequently when reading, "I ate six of them." Besides head movements and good eye contacts, frequent use of overt hand movements was observed as well when reading "You make the best spring rolls." They also shared that they generally use body language along with emphasis, and facial expressions such as eyes and mouth help convey "the speaker"s true feelings."

Importance of Emphasis in Communication

Japanese ELLs

Japanese ELLs reported that, because they are limited in vocabulary, they tend to choose "simple words" to create sentences. They also indicated that, generally, simple sentences are not enough to explain complicated ideas so they use emphasis to help convey their feelings.

Some Japanese ELLs reported learning from their own personal experiences that they could not make themselves understood in monotone English. Some reported that, even with their "flat English," they can be comprehensible, but expression with intonation helps enhance communication. For example, one Japanese ELL participant specifically stated that "intonation is more important than a complete sentence."

Expression Comparison between Japanese and American. The Japanese ELLs observed differences in expressing feelings which can arise because of the cultural differences between the two countries. They reported that Japanese are generally "flat, not expressive, indirect, hold feelings, talk in a roundabout way, and implicit." Japanese sometimes do not have to use explicit words, because they can read other's feelings. They observed Americans are "expressive, direct, straight forward, exaggerated, aggressive, and explicit." They use body language along with their verbal communication most of the time.

NESs

NESs reported quite different understandings of emphasis from the Japanese ELLs. They indicated that emphasis plays an important role in communication, because it shows "the true feelings of speakers and genuineness." They suggested that emphasis helps "get people's

attention, convey important message, show sincerity and empathy, provide intricate and interwoven elements, give voices, and show confidence and assertiveness." For example, one NES stated that emphasis "adds flavor to communication, tells more personal feelings, makes a sentence more listenable, and provides peaks and valleys."

NESs also indicated that emphasis on the wrong place "confuses people" and "gives uncertainty about the speaker's intention."

Acquisition/Learning of Application of Emphasis

Japanese ELLs

Japanese ELLs reported that they generally do not learn at school in Japan how to apply emphasis or create intonation in an English utterance. Therefore, most of them need to make efforts to apply emphasis on words. Many Japanese ELLs reported using Americans as models. A few shared that if speakers "follow their hearts, emphasis can be applied naturally," because emphasis shows the true feelings of the speakers.

One male speaker shared that "It can be different depend on the job they have. If they are in a service business, for example, they may need more expressive English. If they are engineers like me, we do not see the necessity of expressive English, because we don't need to communicate with others most of the time."

NESs

NESs reported that they naturally learned to be expressive from people around them and they can unconsciously apply emphasis. In fact, some indicated that they had never thought about application of word emphasis until asked. A number of NESs, , however, reported learned the

importance of emphasis application from their experiences, including reading books aloud to children, taking classes such as interpersonal communication, public speaking, drama, theater, and forensics. A few also reported learning from playing musical instruments as they needed to apply forte or piano, for example, to create differences in volume to fit effectively to melodies. One shared that he learned being expressive from his sales business experiences.

Use of English in Daily Life. According to the questionnaire, the use of English in the daily life was mixed. Some Japanese ELLs reported that they use English most of their time in their home/school/work. Others indicated that they used English infrequently at home, dependent upon the language of the others at home. The use of English at school/work appeared to depend upon the necessity of the use of English.

Goal of Communicative English. The majority of the Japanese ELLs shared that "speaking like Americans is not realistic." Their goal, therefore, is to make themselves more intelligible, comprehensible, and communicable.

Personality Trait and Application of Emphasis

Japanese ELLs

Some Japanese ELLs reported feeling shy to express themselves, because being expressive is sometimes beyond their comfort level. One participant even shared that because she was raised not to show too much feelings, it is not easy to change her speaking style. When they are angry, however, it seems easier to express themselves. Even though it is not their

personal style, they push themselves to be more adaptable to the American culture, because they learned the importance of "When in Rome, do as the Romans do" from their difficult experiences.

Some Japanese ELLs reported that it is easier to express themselves in one-on-one communication. It is hard to talk like Americans in a group. When they communicate in a group where other Japanese are included in particular, it is difficult to be expressive. They do not like to be compared or their English to be judged by other Japanese. Additionally, it was observed that the use of English during the data collection was effective; not only to make the conditions of data collection the same between the Japanese ELLs and NESs, but also to create a sense of evenness regarding speaking English among the Japanese ELLs. The investigator and the Japanese ELLs both heard each other"s English without providing a tense feeling that their English was heard and judged one-sidedly. In discussing the task performed for this study, about half of the Japanese ELLs reported that role play helped because they feel comfortable when they know that "it was not me" who spoke in an expressive way. For the others, however, the role playing aspect was not a factor because they have learned from their experiences that they had to use more effective expression to enhance communication.

NESs

A few NESs shared that they are shy and feel shy to express themselves. Others, however, reported that they generally do not feel shy to express themselves even though they observe themselves as shy.

In discussing the task performed for this study, a few NESs reported that role play helped because they felt relaxed when they were aware that it was simply a role.

CHAPTER V

DISCUSSION

This chapter provides a summary of the study and examinations of the findings for each study question with respect to possible contributory factors of the outcomes from quantitative and qualitative aspects. Implications and suggestions for future study are also explored.

Summary of the Study

The purpose of this study was to investigate a possible association between the application of word emphasis and risk-taking behaviors of the Japanese English-language learners (ELLs) through (a) comparing the acoustic measurements of vowel duration, fundamental frequency (F0), and intensity of the target words (pre-determined by the investigator: *good, hot, fun, best, six*) in the general reading (R1) of a scenario by the Japanese ELLs and native American-English speakers (NESs); (b) comparing the three acoustic measurements of R1 and the second reading of the same scenario with an instruction to apply feelings (R2) of the Japanese ELLs; (c) examining a relationship between the native listeners‟ ratings and the Japanese ELLs‟ two readings; and (d) examining a relationship between the Japanese ELLs‟ scores on a risk-taking questionnaire with the listeners‟ ratings and the three acoustic measurements.

Participants were comprised of 30 adult Japanese-ELLs (15 males and 15 females) who currently reside in the US, and 30 age-matched NESs (15 males and 15 females) from the Central Midland region. Their speech samples were recorded individually upon reading a scenario, which contained five target words for possible emphasis application.

The five target words were used for the acoustic measurements of vowel duration, F0, and intensity using PRAAT. The tokens were also judged on a 4-point Likert rating scale by seven native English-speaking listeners for comprehensibility and foreign accentedness. A risk-taking questionnaire was used to assess the Japanese ELLs‟ risk-taking behaviors. In addition, the participants were interviewed in order to obtain information about their insights and experiences on the application of emphasis and their risk-taking behaviors.

Two-way multivariate analysis of variance (MANAOVA) did not reveal a significant difference in the three variables between the Japanese ELLs and NESs. The Japanese ELLs made significant positive changes in each variable from R1 to R2. The listeners‟ ratings, however, demonstrated a decrease in comprehensibility and an increase in foreign accentedness for the changes. Finally, there were no significant correlations between the Japanese ELLs‟ risk-taking scores and the changes they made from R1 to R2 measured by computer and the listeners.

Discussion

R1 Comparison between the Japanese ELLs and NESs

The first question was to determine whether or not there was a significant difference in vowel duration, F0, and intensity of the target words in R1 between the groups (Japanese ELLs and NESs) and gender across the two groups. Two-way MANOVA revealed that vowel duration, F0, and intensity of the target words in R1of the Japanese ELLs were not significantly different from NESs‟ including gender across the two groups.

When all speech tokens were used for the statistical analyses, no significant difference was found in vowel duration, F0, and intensity of the target words between the two groups. Further examination of the mean differences in each variable indicated that the Japanese ELLs‟

vowel durations, as a whole, were longer than the NESs; the F0 was slightly higher; and the intensity was about the same. These outcomes were unexpected based on a previous study by Wennerstrom (1994), who found that English productions by Japanese ELLs was flat or rather monotone without much prosodic difference because of the Japanese mora-timed system that yields equal length and loudness of a word. Additionally, she reported that Japanese ELLs did not use pitch variations, as Americans did, to contrast significance

It was speculated that these outcomes arose because the investigator in the current study used only the target words to measure the three acoustical variables. In fact, some participants did not use the anticipated target words for emphasis. Identification of the words actually used for emphasis based on the acoustic information indicated that 55 participants selected the target word *six* in a total of 60 participants, whereas only 18 selected *fun*. The American females chose the same target words for emphasis as the investigator most often (55 in a total of 75 opportunities to select the target words), the Japanese females chose the target words next (42), the Japanese males next (41), followed by the American males (37).

In the current study, the investigator did not provide instruction on words for emphasis. The choice was intentionally left to the speakers following previous research results that claimed emotional expression is not language-specific, but rather a speaker‟s personal intent (Shen, 1990; Wennerstrom, 2001) and adjectives of emotional status are generally chosen as the placement of prominence (Wennerstrom). The selection of the words for emphasis by the participants differed markedly from those of Shen and Wennersrom.

Celce-Murcia, Brinton, and Goodwin (1996) argued that whether words receive stress or not is generally determined by the category of words; content words (i.e., information word) such as nouns, verbs, adjectives, and adverbs are usually stressed. Upon examining the

sentences that contained the target words in the current study, there are the same number of words in "I ate *six* of them" and "I met some *fun* people." The latter sentence, however, contained more content words, which could have allowed more options for emphasis to the speakers.

Another contributor might be the length of the sentence. It was found that the fewer words the sentences contained, the more likely the target words were selected for emphasis. Namely, an increase in the number of words offered more options to select. For instance, the sentence "I had a *good* time at your party" contains eight words compared to four in "It was hot outside." Consequently, *hot* was selected more often.

When the statistical analyses were conducted the second time using only those participants who selected the target words with full awareness of the reduction in number of the participants, no significant differences were found between the language groups or gender across the groups. Further examination of the mean differences in each acoustic variable indicated that the vowel duration of the Japanese ELLs, as a whole, was slightly longer than the NESs by .032 ms. The F0 of the ELLs, however, was lower than the NESs by .84 Hz, and the intensity was also smaller by .21 dB. These results contradict the Wennerstrom"s study (1994) again.

Additionally, the F0 was found to be significantly different between genders within and across the language groups, ($p < .05$), although it was not the primary focus of the first question. These findings corroborated the previous knowledge that women"s F0 is higher than the men"s affected by the length of the pharyngeal-oral tract (Pickett, 1999).

In the interviews of the Japanese ELLs and NESs, a majority shared that they selected the descriptive words, adjectives, "complimentary words," and positive words in the scenario for emphasis. When asked, the participants indicated the choice of the investigator"s target words

most often. Their choices of the target words, however, were not confirmed by the acoustical measurements. This suggests that actual performance involves more than just a theoretical understanding of where emphasis should/could be placed. Additionally, their interpretation of the target word *hot* was unique: Approximately half of the participants considered this word as negative and said they would apply little emphasis. The participants in both groups mentioned that they generally do not put much emphasis on negative words and use lower pitch rather than high. The inclusion of this qualitative aspect of the study was found to be highly beneficial as it provided the participants‟ insights into the psychological and social aspects in communication as Lambert (1991) suggested.

The results of the current study may also have been influenced by the following factors: (a) sampling error created by a small sample size after eliminating those who did not use the target words; (b) recording that contributed to increasing the participants‟ anxiety; (c) being in the era of globalization, which provides more opportunities to communicate with NESs; (d) personal preference and style for emphasis selection that does not generally follow a consistent pattern (Garn-Nunn & Lynn, 2004); and (f) a change of focus in pronunciation instruction from the segmental to the suprasegmental level to improve communicative competency (e.g., Anderson-Hsieh, Johnson, & Koehler, 1992; Derwing, Munro, & Wiebe, 1998; Edwards & Strattman, 1996; Field, 2005; Gilbert, 1984; Morley, 1991; Riney, Takagi, & Inutsuka, 2005; Sikorski, 2005).

It could be inferred from the findings of the first question that the Japanese ELLs in this study did apply emphasis to create a rhythm without instruction to do so, which did not significantly deviate from what the NESs did. These findings were confirmed by the results of the next question that they were able to make changes to their degree of emphasis from R1 to R2.

Comparison of the Japanese ELLs‟ R1 and R2

The second question was to determine whether or not there was a significant difference in vowel duration, F0, and intensity of the target words between the Japanese ELLs‟ R1 and R2 and gender. Two-way repeated-measures of ANOVA used to compare the R1 and R2 of the Japanese ELLs on vowel duration, F0, and intensity indicated that there was a significant positive change in each variable from R1 to R2. Analyses for gender also measured significant increases.

For investigating this question, those who selected the target words for emphasis both in R1 and R2, and those who selected no specific words for emphasis in R1 and the target words in R2 were used. Inclusion of those who selected no specific words in R1 and the target words in R2 was considered appropriate as they indicate the positive effect of the instruction, which was to read the scenario with feelings the second time. The significant increases from R1 to R2 in each variable demonstrate that the ELLs were capable of changing duration, F0, and intensity of the vowels by applying emphasis. This finding was also supported by the interview responses where the ELLs shared that they did apply more emphasis on the important words/descriptive words in R2 by saying them louder, slower, and higher in pitch. Their comments also included that they imagined the fun party, tried to convey happy feelings, and read the scenario in a friendly manner. Some also mentioned that they used Americans as their models.

The results confirmed that they made overall changes most in duration, then in F0, and in intensity, which was consistent with the outcomes of the first question that the Japanese ELLs‟ overall vowel duration was longer than the NESs even though non-significant. The element they used most to apply varied emphasis was not F0 contrary to Wennerstrom‟s (2001) study that emphasis is most commonly addressed by pitch to add information to an utterance. Even though

the Japanese ELLs could make changes in the three elements, the finding that the duration was used more for emphasis could be attributed to the mora system in the Japanese language which might remain as an overriding influence.

The Japanese ELLs‟ Readings and Listeners‟ Ratings

The third question was to determine whether or not there was a relation between the listeners‟ ratings of comprehensibility and foreign accentedness and the Japanese ELLs‟ R1 and R2. A two-way repeated-measures ANOVA measured significant increases in the listeners‟ ratings from the ELLs‟ R1 to R2, indicating that they became less comprehensible with more foreign accent in R2.

Even though the second research question demonstrated that the Japanese ELLs could make positive changes in vowel duration, F0, and intensity of the target words, the listeners‟ ratings did not correlate with the changes. These changes did not produce improved outcomes.

Before investigating the potential factors that influenced the outcomes, a review of the terms, comprehensibility and foreign accent, may be instructive. Comprehensibility is defined as an overall rating of how easy it is for listeners to understand an utterance of a speaker (Derwing & Munro, 2005). Foreign accentedness is an overall rating of the closeness to native English speakers‟ sound production, which does not necessarily affect the comprehensibility (Derwing & Munro). Some researchers have agreed that what contributes to listeners‟ comprehensibility most is the overall rhythm created by emphasis, because listeners generally rely on the stressed syllables for recognizing essential information (Bond, 1999; Celce-Murcia, Brinton, & Goodwin, 1996; Edwards, 2003; Field, 2005; Wong, 1993). The NESs shared some comparable comments in the interview to indicate the importance of emphasis from their own experiences. Their remarks about using emphasis on the wrong place corroborate Field‟s study findings that stress

on the incorrect syllable is confusing and affects intelligibility as well. Rhythm, in other words, is punctuation and capitalization in speech (Wong, 1993).

The findings of the first two questions demonstrated that the Japanese ELLs were capable of applying emphasis, and they also could change the levels of emphasis. These changes, however, did not contribute to the improvement of comprehensibility and foreign accent ratings. One explanation of this outcome may lie in the inappropriate control of emphasis that the Japanese ELLs used. In fact, too much use of duration was identified, e.g., on each *hot, out*, and *side* in "It was hot outside." This may serve as a cue of foreign accentedness to the listeners. The mora system of Japanese could influence to the length to their sound production, equal length and equal strength(Anderson, 1993; Mochizuki-Sudo, & Kiritani, 1991). Many of the NESs shared that they acquired how to apply emphasis naturally as they grew up from daily communication. " On the contrary, the Japanese ELLs remarked that they need to make a conscious effort in the application of emphasis, which could make their expressions sound rather artificial to American listeners.

The speed of the speech (i.e., rate) may also be a contributor that affected the listeners" understanding because it is influenced by some factors such as the length and number of pauses in an utterance, duration affected by stressed or unstressed syllables, and emotion of a speaker (Garn-Nunn & Lynn, 2004; Hull, 2009). Interestingly, a few of the NESs stated that they employ pauses to express emphasis as Edwards (2003) posited.

Some researchers have concluded that the suprasegmental level is more relevant to intelligibility than the segmental level of the phoneme (Anderson-Hsieh, Johnson, & Koehler, 1992; Derwing, Munro, & Wiebe, 1998; Edwards & Strattman, 1996; Field, 2005; Gilbert, 1984; Morley, 1991; Riney, Takagi, & Inutsuka, 2005; Sikorski, 2005; Wong, 1993). Vowels, another

kind of the most basic sound, have been found to be more difficult to teach and learn than consonants**,** because their articulatory properties cannot always be clearly described, and vowel articulation is not easy to observe without special instrumentation (Wang & Munro, 2004).

Fatigue of the listeners could be counted as another contributor to these results. The listening sessions were divided into three days. Assessing the speech tokens for approximately 2 hours per session required concentration. Even though one set of the training samples was played at every 60 speech tokens as a reference of varied emphasis, its effect is unknown. Also, the short individual sentences may have contributed to the ease of comprehensibility.

Risk-Taking Behavior

The final question was to determine whether or not there was a relationship between the Japanese ELLs‟ risk-taking scores and the three acoustic elements of vowel duration, F0, and intensity; and the listeners‟ ratings of comprehensibility and foreign accentedness. The correlational analyses revealed that the Japanese ELLs‟ risk-taking scores as a whole did not have a significant correlation with the differences in the three acoustic measurements from R1 to R2 nor with the differences in the listeners‟ ratings of comprehensibility and foreign accentedness.

When L2 learning is filled with uncertainty about pronunciation, semantics, syntax, pragmatics, and culture-related perceptions, individuals are placed in a situation that they have to make decisions involving choices without any certainty about the outcomes (Beebe. 1983; Breakwell, 2007; Trimpop, 1994). Rubin (1975) in a study of risk taking and learning L2 determined that a "good language learner" requires a certain tolerance for making mistakes to be able to learn. A positive relationship between risk-taking behavior and language learning,

especially oral skills, has been found by some researchers (e.g., Brown, 1994; Busch, 1982; Naiman, Fröhlich, Stern, & Todesco, 1996; Rubin, 1975). Brown claimed that oral communication involves social interaction; moderate but intelligent risks enhance success in learning language. These views are based on findings from studies of L2 learning rather than from studies of accent modification. The findings of the current study were not in agreement with these previous findings.

Upon examination of the risk-taking scores of the Japanese ELLs, it was found that approximately 68% of the participants were captured in a normal distribution of risk-taking behavior. This suggests that sampling was typical. Results of the current study supports a previous finding (Beebe, 1983) that gender was not significantly different in risk-taking by revealing that the females (M=38.80, SD=6.92) and males (M=36.80, SD=6.27) were not statistically different.

When the participants were grouped into the three risk-taking groups created by PASW for further examination, the distribution was 9 in low group, 12 in mid, and 9 in high group. There were more males in the low risk-taking group (5 vs. 4) and more females in the high risk-taking group (2 vs. 7). Results of correlational analyses using these three risk-taking groups and the acoustic measurement revealed no significant correlation except intensity in the high-risk group. There was no statistically significant correlation among any risk-taking groups and the listeners‟ ratings of comprehension and foreign accentedness based on R1 and R2.

Qualitative data collection and analyses helped explore the potential causes of the outcome. Many ELLs shared that they had difficult personal experiences related to comprehensibility and that they needed to be more expressive to enhance communication, even if they were not comfortable in using a rather “exaggerated” expression. As few said that the

importance of having an attitude of "When in Rome, do as the Romans do," their experiences taught them that making themselves understood was essential in the American society and application of emphasis helped satisfy the goal. This finding suggests that regardless of their personal risk-taking ability, these participants were attempting to change their speech patterns by applying emphasis to be comprehensible. Moreover, further investigation in the questionnaire on the language the Japanese ELLs use for home and work/school communication revealed that the participants in high-risk group used English more frequently than Japanese. Those in the low-risk group reported less frequent use of English and more frequent use of Japanese in their daily speaking. This supports Rubin"s (1975) claim that extraverts create more opportunities to practice English, using input to improve their skills. They also increase their motivation to be successful in communication.

Furthermore, when asked if the role-play in the readings helped them express themselves, responses varied. A few shared that it did not help because they felt that they were naturally shy. Some mentioned the role-play helped because they knew they were playing a different role and "it is not me," which supports Hilleson"s (1996) claim that role-play provides NNSEs an opportunity to take on another persona to learn L2 with less anxiety. A few added further comments that they "feel their personality changes" when they speak in Japanese and in English. When they talk in English, they force themselves to be more expressive to enhance better communication even though it is not their personal style. They did feel certain uncomfortable feelings, but it was not like fear of identity loss as Beebe (1983) claimed. Further remarks indicated that some did not feel as shy as before because practice being more expressive made them feel more comfortable and confident. This may suggest that they were successful in integrating the meaningfulness of their new role as speakers of English (Kelly, 1955; Oliver &

Schlutsmeyer, 2006). Many, however, remarked that regardless of the role-play instruction or not, they had already learned the importance of being expressive from their experiences of not being understood.

When the personality trait is examined at a cultural level, Lynn and Hampson (1975) found that the US is the most extraverted country, whereas Japan is the least according to their study of nationality and personality. Although the risk-taking behavior of the NESs in this study was unknown, the general impression on personality between the two cultures may differ as these researchers suggested. In fact, the Japanese ELLs had totally different views on Japanese and Americans: Japanese are more indirect and implicit, whereas the Americans are more direct and explicit.

Interestingly, however, the American males in the current study were suggested to be the least expressive. This finding proposes that individual differences do exist regardless of the culture. Risk-taking is a subjective appraisal that comes from different personalities, cultural background, ages, gender, and situation. Learning and teaching English involves more complex and sensitive elements behind the language.

No significant relationship was found between the risk-taking behavior of the participants in this study and their application of word emphasis. This may suggest that learners with high motivation to achieve are moderate risk takers as Atkinson (1964) argued. The participants‟ remarks that they force themselves to be expressive to enhance communication, however, may strongly suggest that they are risk-takers and good language learners who have a "healthy self-esteem which leads them to be less prone to expecting that their normal errors make them look foolish" (Beebe, 1983, p. 46).

Implications

The current study yielded some beneficial information that TESOLs and SLPs could employ not only for Japanese ELLs but also for other non-native speakers of English to help modify their foreign accent. The Japanese ELLs were capable of applying word emphasis to create a rhythm to an utterance. They were also able to apply varying levels of emphasis using vowel duration, F0, and intensity, however; their abilities to change speaking patterns did not positively affect the listeners‟ ratings of comprehensibility and foreign accentedness. Even though they thought they had emphasized a certain word, the acoustical measurement demonstrated they had not.

These findings may provide an encouraging starting point for modifying NNESs‟ foreign accent by showing the potential for change. TESOLs and SLPs should be also be aware of the importance of appropriate instruction regarding emphasis. As Garn-Nunn and Lynn (2004) claimed, emphasis as a personal communicative intent may not follow certain rules. The findings, however, suggested that applying emphasis itself does not help enhance communicability unless it is appropriately used. Effective and specific instructions are recommended for ELLs.

As one suggestion of the specific instructions, an application of effective computer use is proposed (Ferrier, Reid, & Chenausky, 1999; Hoppe, Sadakata, & Desain, 2006). The pitch contour on the screen, for example, provides an instant visual feedback to compare NNESs and NESs‟ pitch differences and demonstrate whether or not changes in pitch were accomplished. Other researchers have suggested specific instruction on how to create a rhythm in an utterance, which should include main words to apply emphasis (Celce-Murcia, Brinton, & Goodwin, 1996; Wennerstrom, 2001); linking of phonemes (i.e., ligatures and blending; Edwards & Strattman,

1996); pronunciation change of reduced syllables (i.e., use of schwa; Brown & Kondo-Brown, 2006), and control of vowel length, pitch level, and loudness.

Additionally, this study suggests the contributory use of both technology (PRAAT in this study) and human ears as measuring tools. The overall correlation for the identification of the target words used for emphasis in R1 and R2 between PRAAT and the listeners was 0.89 according to Cronbach"s coefficient alpha. The current study may demonstrate the separate role that each tool serves to meet the purpose of measurements.

Moreover, although the outcome of the relationship between risk-taking behavior and the application of emphasis was not significant in the current study, it may remind instructors that accent modification involves more than a verbal level of instruction. More focus should be placed on individual differences and making them more adaptable to the American society by tailoring instruction strategies to their personalities. American English could not be learned without learning the culture of the US, and, at the same time, English could not be taught without respecting the culture of ELLs.

Body language, for example, can be a good tool to enhance the expression of ELLs. Some NESs shared in the interviews that they use body language including facial expressions along with their expressive utterances as it is indispensible for smooth and natural communication. In fact, use of body language was observed for some NESs while reading the scenario, but not for the Japanese ELLs. In spite of the differences in personality traits and cultural backgrounds of the ELLs, body language should be encouraged to all if it helps enhance communicability in the American society. Also, following rules and customs of the American culture does not mean that speakers have a split personality (Nakajima, 2002). They are simply playing a role to be more comprehensible in the American culture.

The overall results of the current study extend the knowledge of previous research on discrete elements to modify foreign accent. More comprehensive research and instruction of segmental, suprasegmental, and nonverbal variables adaptable to American society is suggested. This study would be enhanced by more collaboration between SLPs and TESOLs. SLPs who possess expertise with clinical assessment and physiological knowledge and TESOL who are knowledgeable about multicultural perspectives, teaching strategies, and other cultural issues might be able to create a more effective approach to meet future needs.

Suggestions for Future Research

A recognized limitation of the current study was the discrepancy in the word choices for emphasis between the investigator and the participants. The pre-determined target words reduced the challenges in making acoustical measurements of the words that each participant used for emphasis, yet the use of only those participants who selected the target words decreased the number of participants to facilitate better generalization. Further examination of the design regarding how data may be collected on emphasized words is necessary.

More extended investigation of risk-taking behavior and application of emphasis is needed. The first examination should be placed on scales to measure the risk-taking behavior. The scale used for this study was domain specific, limited only to the situation of ELLs‟ English learning. The domain specific scale may have served better for the purpose of this study, but the small number of the questions (10) was a concern.

When risk-taking is not a fixed trait and can be affected by some factors such as the situation, the social setting, and personal characteristics, the use of other scales, namely non-domain specific, should be considered. Some possibilities include Attitude/Motivation Test

Battery (Bernaus & Gardner, 2008), the Domain-Specific Risk-Taking Scale (Blais & Weber, 2006), and the Risk-Taking Questionnaire adopted and modified by Sheperd from the Eysenck Personality Questionnaire (Shepherd, 2009). What needs to be considered in the selection of the scale is ease of use and moderate number of the questions for ELLs. More research on risk-taking scales is warranted.

The second examination should be placed on situations to measure risk-taking behavior. The task of leaving a voice mail and the topic of the message of the current study may not have involved enough risk to differentiate speakers‟ risk-taking level. When accessing the risk-taking behavior relative to L2, varied aspects to examine it should be considered.

Finally, the relationship between risk-taking behavior and application of emphasis should be explored further, examining other factors including age and length of the US residence. The age range of the participants used in this study was from 21 years to 41. Participants excluded from the current study were older, and their length of US residence was longer than those who were included. Beebe (1983) indicated that the older people tend to be less risk-taking than the younger. It is possible that inclusion of older participants and further exploration may reveal important findings.

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FOOTNOTES

[1]English is referred to as a second language when learned in a country where English is spoken as a main language (Freeman & Freeman, 1998).

[2]English is referred to as a foreign language when learned in a country where other language than English is spoken as a main language (Freeman & Freeman, 1998).

[3]Intelligibility is the extent to which the speaker‟s intended utterance is understood by a listener (Derwing & Munro, 2005).

[4]Comprehensibility is measured by an overall rating of how easy it is for a listener to understand an utterance of a speaker (Derwing & Munro, 2005.

[5]Speech-monitoring abilities are skills to monitor his or her own speech for continuous development of intelligibility, comprehensibility, communicability, and communicative competence (Morley, 1998).

APPENDICES

APPENDIX A

DEMOGRAPHICS OF JAPANESE ENGLISH-LANGUAGE LEARNERS

Females

1	2	3	4	5	6	7	8	9	10
JF2	27	Junior college	14:06	J100/E0	J50/E50	J75/E25	J75/E25	J75/E25	no
JF3	36	College	4:07	J100/E0	J0/E100	J75/E25	J75/E25	J75/E25	French
JF5	25	College	2:06	J100/E0	J100/E0	J50/E50	J100/E0	J75/E25	no
JF6	21	College	2:00	J0/E100	J25/E75	J25/E75	J0/E100	J25/E75	no
JF8	32	Some college work	3:10	J75/E25	J0/E100	J50/E50	J0/E100	J0/E100	no
JF10	38	College	8:05	J50/E50	J25/E75	J0/E100	J25/E75	J25/E75	no
JF11	34	Some doctoral level	2:06	J0/E100	J0/E100	J25/E75	J25/E75	J50/E50	no
JF12	26	College	1:00	J100/E0	J50/E50	J25/E75	J50/E50	J50/E50	no
JF13	33	College	10:05	J75/E25	J25/E75	J0/E100	J75/E25	J25/E75	no
JF14	36	Some doctoral level	12:00	J0/E0*	J75/E25	J50/E50	J50/E50	J25/E75	no
JF15	41	College	15:07	J100/E0	J75/E25	J75/E25	J100/E0	J75/E25	no
JF18	40	High school	4:05	J75/E25	J25/E75	J0/E100	J75/E25	J75/E25	no
JF20	33	A master's degree	9:00	J0/E100	J0/E100	J0/E100	J25/E75	J50/E50	no
JF21	37	Junior college	6:00	J25/E75	Not work	J75/E25	J75/E25	J75/E25	no
JF22	33	College	6:06	J50/E50	J100/E0	J50/E50	J50/E50	J50/E50	no
M	32.8		6:11						

Categories

1. Original ID number & gender , f=female, m=male
2. Age
3. Level of education completed,
4. Length of the US residence (years: months)
5. Percentage of home language, * almost no communication at home, J = Japanese, E = English
6. Percentage of school/work language
7. Percentage of amusement language
8. Percentage of reading language
9. Percentage of writing language
10. Other language to speak

APPENDIX A (continued)

Males

1	2	3	4	5	6	7	8	9	10
JM1	31	Some graduate work	2:10	J50/E50	J25/E75	J75/E25	J25/E75	J75/E25	no
JM2	26	A master's degree	8:02	J0/E100	J0/E100	J10/E90	J50/E50	J50/E50	no
JM3	36	College	1:11	J0/E100	J0/E100	J25/E75	J25/E75	J0/E100	no
JM4	30	A master's degree	4:11	J25/E75	J0/E100	J25/E75	J50/E50	J0/E100	no
JM5	21	Community college	2:10	J25/E75	J25/E75	J50/E50	J25/E75	J25/E75	no
JM6	28	A master's degree	4:09	J25/E75	J25/E75	J50/E50	J50/E50	J25/E75	no
JM7	25	Some college work	5:06	J100/E0	J25/E75	J50/E50	J25/E75	J25/E75	no
JM8	21	Some college work	1:06	J25/E75	J0/E100	J0/E100	J0/E100	J0/E100	Spanish
JM9	20	Some college work	1:09	J0/E100	J25/E75	J50/E50	J50/E50	J75/E25	no
JM11	31	A PhD degree	1:03	J100/E0	J50/E50	J25/E75	J25/E75	J25/E75	no
JM12	38	A PhD degree	1:01	J0/E0*	J10/E90	J0/E100	J25/E75	J50/E50	no
JM14	20	Some college work	2:00	J50/E50	J25/E75	J50/E50	J50/E50	J50/E50	Chinese
JM16	22	College	4:00	J100/E0	J50/E50	J75/E25	J50/E50	J25/E75	no
JM17	20	Some college work	2:00	J100/E0	J0/E100	J50/E50	J75/E25	J75/E25	no
JM18	32	Some college work	3:00	J100/E0	J0/E100	J75/E25	J75/E25	J75/E25	no
M	26.7		3:02						

Categories

1. Original ID number & gender , f=female, m=male
2. Age
3. Level of education completed,
4. Length of the US residence (years: months)
5. Percentage of home language, * almost no communication at home, J = Japanese, E = English
6. Percentage of school/work language
7. Percentage of amusement language
8. Percentage of reading language
9. Percentage of writing language
10. Other language to speak

APPENDIX B

SCENARIO

Situation:

You called your friend Jack to ask him a question, but he did not answer the phone. So, you decided to leave him a message to call you back. You also decided to tell him again that you enjoyed the party he had a few days ago.

Hello, Jack. This is Kim.

I have a question for you.

Could you call me back?

By the way, I had a **good** time at your party.

It was **hot** outside.

But, I met some **fun** people.

You make the **best** spring rolls.

I ate **six** of them.

A **big** thanks to you.

Bye.

APPENDIX C

RISK-TAKING QUESTIONNAIRE

Please answer the following statements about your way of speaking English by circling one number for each.

		Strongly Agree	Moderately Agree	Slightly Agree	Slightly Disagree	Moderately Disagree	Strongly Disagree
a	I like to wait until I know exactly how to use an English word before using it.	1	2	3	4	5	6
b	I don‟t like trying out a difficult sentence in a group.	1	2	3	4	5	6
c	At this point, I don‟t like trying to express complicated ideas in English in a group	1	2	3	4	5	6
d	I prefer to say what I want in English without worrying about the small details of grammar.	1	2	3	4	5	6
e	Please do not circle any numbers here.	1	2	3	4	5	6
f	When I speak in a group, I prefer to say a sentence to myself before speaking it.	1	2	3	4	5	6
g	I prefer to follow basic sentence models rather than risk misusing the language.	1	2	3	4	5	6
h	When I don‟t know how to pronounce a word, I usually guess the pronunciation.	1	2	3	4	5	6
i	In a new group of people, I am rather cautious.	1	2	3	4	5	6
j	When I have a chance to lead a meeting at work/school, I would accept the challenge.	1	2	3	4	5	6
k	When asked to say a sentence in a different manner, I would try it.	1	2	3	4	5	6

APPENDIX D

LISTENER-RATERS ASSESSMENT FORM

Name: _____

1	Word emphasized:	_____			
	Comprehensibility:	1	2	3	4
	Accentedness:	1	2	3	4
2	Word emphasized:	_____			
	Comprehensibility:	1	2	3	4
	Accentedness:	1	2	3	4
3	Word emphasized:	_____			
	Comprehensibility:	1	2	3	4
	Accentedness:	1	2	3	4
4	Word emphasized:	_____			
	Comprehensibility:	1	2	3	4
	Accentedness:	1	2	3	4
5	Word emphasized:	_____			
	Comprehensibility:	1	2	3	4
	Accentedness:	1	2	3	4
6	Word emphasized:	_____			
	Comprehensibility:	1	2	3	4
	Accentedness:	1	2	3	4

APPENDIX E

INSTRUCTIONS FOR LISTENER-RATERS

You will listen to English samples. Please do the following tasks for each sample.

Task 1: If you hear any word as emphasized for each sample, write the word. If you do not hear any word as emphasized, leave a blank.

Task 2: After listening to a sample, circle one number that corresponds to the rating of your comprehensibility. Comprehensibility should be measured by an overall rating of how easy it is for you to understand an utterance of a speaker.

Rating scales and descriptors:

1- Very comprehensible (very easy to understand)

2- Comprehensible (able to understand generally)

3- Somewhat incomprehensible (somehow difficult to understand)

4- Very incomprehensible (very difficult to understand)

Task 3: After listening to a sample, circle one number that corresponds to the rating of your perception of accentedness. Accentedness should be measured by an overall rating of closeness to native English speakers.

Rating scales and descriptors:

1- No foreign accent (native sound)

2- Some foreign accent

3- Strong foreign accent

4- Extremely strong foreign accent

APPENDIX F

QUESTIONNAIRE FOR JAPANESE ENGLISH-LANGUAGE LEARNERS

1. Age: _____ 2. Gender: ____ Male, ____ Female
3. What is the highest level of education you have completed? Please circle one.

   Some high school work, Completed high school, Some college work, Completed college,
   Some graduate work, A master"s degree, Some doctoral level work, A PhD degree
4. Current major (if you are a student) / Current job (if you are working):_____
5. How long have you been in the US? (Please specify years and months) _____
6. How old were you when you started to learn English? _____
7. How many years have you studied/been studying English? _____
8. How do you/did you learn English? (Please check all that apply):

   ___ ESL class in the US: ___ by native English instructors, ___ by non-native English instructors

   ___ Intensive Language Center in the US: ___ by native English instructors, ___ by non-native instructors

   ___ Regular class at college/university in the US

   ___ Self study: ___ radio, ___ TV, ___ movies, ___ newspaper, ___ books/journals,
   ___ learning materials on CD/DVD

   ___ Others (Please specify) _____
9. What is an approximate percentage of using Japanese and English daily in the following situations? Please circle one in each situation. (E=English, J=Japanese, % mark is omitted)

   a. Home communication

      J 100 / E 0, J 75 / E 25, J 50 / E 50, J 25 / E 75, J 0 / E 100, Other: J ____ / E ____

   b. School/work communication

      J 100 / E 0, J 75 / E 25, J 50 / E 50, J 25 / E 75, J 0 / E 100, Other: J ____ / E ____

   c. Amusement (e.g., TV, movie, music, radio)

      J 100 / E 0, J 75 / E 25, J 50 / E 50, J 25 / E 75, J 0 / E 100, Other: J ____ / E ____

   d. Reading (e.g., newspaper, textbook, journal, mail, & recreational)

      J 100 / E 0, J 75 / E 25, J 50 / E 50, J 25 / E 75, J 0 / E 100, Other: J ____ / E ____

   e. Writing (e.g., mail, paper, & diary)

      J 100 / E 0, J 75 / E 25, J 50 / E 50, J 25 / E 75, J 0 / E 100, Other: J ____ / E ____
10. Do you speak other languages than Japanese and English? ___ Yes, ___ No

    If Yes, which language? _____

APPENDIX G

QUESTIONNAIRE FOR NATIVE ENGLSIH SPEAKERS

1. Age: _____

2. Gender: ___ Male, ___ Female

3. What is the highest level of education you have completed? Please circle one.

   Some high school work, Completed high school, Some college work, Completed college,
   Some graduate work, A master"s degree, Some doctoral level work, A PhD degree

4. Major (if you are a student) / Job (if you are working):_____

5. Are you from Kansas?: ___ Yes, ___ No

   - If you answered "Yes" on #5, please answer the following questions.

     Have you ever lived in any states other than Kansas?: ___ Yes, ___ No

     - If "Yes," which state (s) _____, and how long? _____

       _____, _____

       _____, _____

   - If you answered "No" on #5, please answer the following questions.

     Which state are you from? _____

     How long have you been in Kansas? (years & months) _____

     Have you ever lived in any states other than your state and Kansas?: ___ Yes, ___ No

     - If "Yes," which state (s) _____, and how long? _____

       _____, _____

       _____, _____

6. Do you speak any languages other than English?: ___ Yes, ___ No

   If "Yes," which language? _____

APPENDIX H

QUESTIONNAIRE FOR LISTENER-RATERS

1. Name: _____, 2. Age: _____

3. Gender: _____ Male, _____ Female

4. Major:_____

5. Are you from Kansas? ___ Yes, ___ No

- If you answered "Yes" on #5, please answer the following questions.

  Have you ever lived in any states other than Kansas? ___ Yes, ___ No

  - If "Yes," which state (s) _____, and how long? _____
    _____, _____
    _____, _____

- If you answered "No" on #5, please answer the following questions.

  Which state are you from? _____

  How long have you been in Kansas? (years & months) _____

  Have you ever lived in any states other than your state and Kansas? ___ Yes, ___ No

  - If "Yes," which state (s) _____, and how long? _____
    _____, _____
    _____, _____

6. Have you ever talked with non-native speakers of English in English? ___ Yes ___ No

- If you answered "Yes" on #6, please answer the following questions.

  What is/was the native language of the speakers, and how often do/did you have opportunities to talk with him/her?

Native language?	How often? (Please circle)
_____	Only a few times, A few times weekly, Almost everyday
_____	Only a few times, A few times weekly, Almost everyday
_____	Only a few times, A few times weekly, Almost everyday

APPENDIX I

CONSENT FORM FOR JAPANESE ENGLISH-LANGUAGE LEARNERS

WICHITA STATE UNIVERSITY
COLLEGE OF HEALTH PROFESSIONS
Department of Communication Sciences and Disorders

CONSENT FORM FOR JAPANESE ENGLISH-LANGUAGE LEARNERS

PURPOSE: You are invited to participate in a study to investigate the association between personal trait and speech of adult Japanese English-language speakers. We hope to learn about the measurable effects of modifying foreign accent.

PARTICIPANT SELECTION: You were selected as a possible participant in this study because you are an adult Japanese English-language speaker currently in the US. We have selected 50 native speakers of Japanese.

EXPLANATION OF PROCEDURES: You will be asked to read a short narrative twice. Each reading will be recorded. Then, you will be asked to complete two questionnaires in order to get biographical information and English experiences. The whole process will take about 30 to 40 minutes and will take place in one appointment.

DISCOMFORT/RISKS: No risks, discomforts, and inconveniences are expected.

BENEFITS: This study will provide data that will assist in developing effective strategies to modify foreign accent of non-native speakers of English.

CONFIDENTIALITY: Any information obtained in this study will remain confidential. Your name will not be used for identification. All records will be kept locked in the university professor's office for three years.

REFUSAL/WITHDRAWAL: Participation in this study is entirely voluntary. Your decision whether or not to participate will not affect your future relations with Wichita State University. Even if you agree to participate in this study, you are free to withdraw from the study at any time without penalty.

CONTACT: If you have any questions about your rights as a research subject, you can contact the Office of Research Administration at Wichita State University, Wichita, KS 67260-0007, telephone (316) 978-3285. If you have any questions about this research, please contact one of the investigators during regular business hours: Kathy Strattman, PhD, Department of Communication Disorders and Sciences, Wichita State University, 1845 Fairmount, Wichita, KS 67260-0075, telephone (316) 978-6356 or Masako Maeda, MEd at the same address, telephone (316) 978-6133.

You are under no obligation to participate in this study. Your signature indicates that you have read the information provided above and have voluntarily decided to participate.

You will be given a copy of this consent form to keep.

_____ _____
Signature of Participant Date

_____ _____
Signature of Investigator Date

WICHITA STATE UNIVERSITY | Department of Communication Sciences and Disorders | 1845 Fairmount Street | Wichita, Kansas 67260-0075
tele: (316) 978-3240 | fax: (316) 978-3291 | e-mail: csd@wichita.edu | web: www.wichita.edu/csd

APPENDIX J

CONSENT FORM FOR NATIVE ENGLISH SPEAKERS

WICHITA STATE UNIVERSITY
COLLEGE OF HEALTH PROFESSIONS
Department of Communication Sciences and Disorders

CONSENT FORM FOR NATIVE SPEAKERS OF AMERICAN ENGLISH

PURPOSE: You are invited to participate in a study to investigate the nature of any differences in the understandability of Japanese English-language speakers compared to native English-speakers. We hope to learn about the measurable effects of modifying foreign accent.

PARTICIPANT SELECTION: You were selected as a possible participant in this study because you are an adult native speaker of American English and you were matched with gender and age of the Japanese participants. We have selected 50 native speakers of American English.

EXPLANATION OF PROCEDURES: You will be asked to read a short narrative twice. Each reading will be recorded. Then, you will be asked to complete a questionnaire to get biographical information. The whole process will take less than 30 minutes and will take place in one appointment.

DISCOMFORT/RISKS: No risks, discomforts, and inconveniences are expected.

BENEFITS: This study will provide data that will assist in developing materials for effective strategies to modify foreign accent of non-native speakers of English.

CONFIDENTIALITY: Any information obtained in this study will remain confidential. Your name will not be used for identification. All records will be kept locked in the university professor's office for three years.

REFUSAL/WITHDRAWAL: Participation in this study is entirely voluntary. Your decision whether or not to participate will not affect your future relations with Wichita State University. If you agree to participate in this study, you are free to withdraw from the study at any time without penalty.

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_____ _____
Signature of Participant Date

_____ _____
Signature of Investigator Date

WICHITA STATE UNIVERSITY | Department of Communication Sciences and Disorders | 1845 Fairmount Street | Wichita, Kansas 67260-0075
tele: (316) 978-3240 | fax: (316) 978-3291 | e-mail: csd@wichita.edu | web: www.wichita.edu/csd

APPENDIX K

CONSENT FORM FOR LISTENER-RATERS

WICHITA STATE UNIVERSITY
COLLEGE OF HEALTH PROFESSIONS
Department of Communication Sciences and Disorders

CONSENT FORM FOR LISTENER-RATERS

PURPOSE: You are invited to participate in a study to investigate the nature of any differences in the understandability of Japanese English-language speakers. We hope to learn about the measurable effects of modifying foreign accent.

PARTICIPANT SELECTION: You were selected as a possible listener for this study because you are a graduate student in the department of Communication Sciences and Disorders at Wichita State University, you have never learned Japanese as a second language, and your daily exposure to Japanese people is minimal. We have selected five students.

EXPLANATION OF PROCEDURES: You will listen to audio recordings of English sentences spoken by native speakers of Japanese to determine the comprehensibility, emphasized words, and emphasis level of each utterance. The first and second readings of the speakers will be randomly presented. It is anticipated that this listening session will take between one and a half and two hours to complete.

DISCOMFORT/RISKS: No risks, discomforts, and inconveniences are expected.

BENEFITS: This study will provide data that will assist in developing materials and procedures for studies of effective strategies to modify foreign accent of non-native speakers of English.

CONFIDENTIALITY: Any information obtained in this study will remain confidential. Your name will not be used for identification. All records will be kept locked in the university professor's office for three years.

REFUSAL/WITHDRAWAL: Participation in this study is entirely voluntary. Your decision whether or not to participate will not affect your future relations with Wichita State University. After agreeing to participate in this study, you are free to withdraw from the study at any time without penalty.

CONTACT: If you have any questions about your rights as a research subject, you can contact the Office of Research Administration at Wichita State University, Wichita, KS 67260-0007, telephone (3160 978-3285. If you have any questions about this research, please contact one of the investigators during regular business hours: Kathy Strattman, PhD, Department of Communication Disorders and Sciences, Wichita State University, 1845 Fairmount, Wichita, KS 67260-0075, telephone (316) 978-6356 or Masako Maeda, MEd at the same address, telephone (316) 978-6133.

You are under no obligation to participate in this study. Your signature indicates that you have read the information provided above and have voluntarily decided to participate.

You will be given a copy of this consent form to keep.

_____ _____

Signature of Participant Date

_____ _____

Signature of Investigator Date

WICHITA STATE UNIVERSITY | Department of Communication Sciences and Disorders | 1845 Fairmount Street | Wichita, Kansas 67260-0075
tele: (316) 978-3240 | fax: (316) 978-3291 | e-mail: csd@wichita.edu | web: www.wichita.edu/csd

APPENDIX L

GUIDE TO ACOUSTIC MEASUREMENT

Your references:

- Your ears
- Wide-band spectrogram (bottom) with a blue solid line of pitch, a yellow solid line of intensity, and red dotted lines of formants, color changes
- Waveform (top), pattern and size changes of periodicity

Settings:

- Spectrum: standard
- Pitch: standard range (75-500 Hz)
- Intensity: standard (50-100 dB)

General vowel onset definition (Peterson & Lehiste, 1960):

- The rapid increment of amplitude (darkness) in the spectrogram
- The first pitch period at the zero-crossing in the waveform after the preceding consonant (the first upward-going or downward-going)

General vowel offset definition (Peterson & Lehiste, 1960):

- Cessation of formants (darkness) in the spectrogram indicating the start of the consonant closure
- The last pitch period at the zero-crossing in the waveform before the consonant closure (the last downward-going or upward-going)
- Abrupt decrease in the amplitude of the waveform

How to identify the target words (good, hot, fun, best, six) and their vowels (/ʊ, ɑ, ʌ, ɛ, ɪ/):

1. Listen to the entire sentence and identify the location of the experimental word by clicking the number below the spectrogram.
2. Isolate the word by placing a cursor at the beginning of the prevocalic consonant, drag till the end of the postvocalic consonant, and listen to the word by clicking the either number right above the waveform or below the spectrogram.
3. Click “sel” at the down left corner to zoom in the selected section.
4. Place a cursor at the end of the prevocalic consonant and drag till the beginning of the postvocalic consonant.
5. Click “sel” to zoom in.
6. Sometimes, it helps to zoom out by clicking “out” to examine both waveform and spectrogram.
7. Watch pattern change in the waveform and color change in the spectrogram.
8. Place a cursor at the onset of the vowel at zero-crossing, drag till its offset.
9. If you start with the first positively going portion, make sure you end with the last positively going portion of the waveform. If you start with the first negatively going portion, make sure you end with the last negatively going portion of the waveform.
10. Click the number and listen.
11. Click “out” once or twice and examine the overall presentation.
12. Write down the number above the highlighted area.

APPENDIX M

WORDS USED FOR EMPHASIS IN R1 AND FREQUENCY BASED ON THE ACOUSTIC INFORMATION

Group & Gender	I	had	a	**good**	time	at	your	party	No Emphasis on Any
Japanese Females	0	0	0	5	8	0	0	1	1
Japanese Males	0	0	0	5	2	0	0	3	5
American Females	0	0	0	12	1	0	0	1	1
American Males	0	0	0	3	3	0	1	1	7

Note. Bold = target word, n = 15 possible for each group.

Group & Gender	It	was	hot	**outside**	No Emphasis on Any
Japanese Females	0	0	9	3	3
Japanese Males	0	0	11	2	2
American Females	1	0	13	1	0
American Males	0	0	13	0	2

Note. Bold = target word, n = 15 possible for each group.

Group & Gender	n	I	met	some	**fun**	people	No Emphasis on Any
Japanese Females	15	0	0	0	8	5	2
Japanese Males	15	0	0	0	5	7	3
American Females	15	1	1	0	3	5	5
American Males	15	0	0	0	2	5	8

Note. Bold = target word, n = 15 possible for each group.

Group & Gender	n	You	make	the	**best**	spring	rolls	No Emphasis on Any
Japanese Females	15	0	0	0	6	2	1	6
Japanese Males	15	0	0	0	6	4	1	4
American Females	15	0	0	0	13	0	0	2
American Males	15	0	0	0	6	0	0	9

Note. Bold = target word, n = 15 possible for each group.

Group & Gender	n	I	age	**six**	of	them	No Emphasis on Any
Japanese Females	15	0	0	14	0	0	1
Japanese Males	15	0	1	14	0	0	0
American Females	15	0	0	14	0	0	1
American Males	15	0	0	13	0	0	2

Note. Bold = target word, n = 15 possible for each group.

APPENDIX N

WORDS USED FOR EMPHASIS IN R2 FOR THE JAPANESE ELLS AND FREQUENCY BASED ON THE ACOUSTIC INFORMATION

Gender	I	had	a	**good**	time	at	your	party	No Emphasis on Any
Japanese Females	0	0	0	6	1	0	0	8	0
Japanese Males	0	0	0	7	3	0	0	5	0

Note. Bold = target word, n = 15 possible for each group.

Gender	It	was	hot	**outside**	No Emphasis on Any
Japanese Females	0	0	9	5	1
Japanese Males	0	0	11	1	3

Note. Bold = target word, n = 15 possible for each group.

Gender	I	met	some	**fun**	people	No Emphasis on Any
Japanese Females	0	0	0	10	4	1
Japanese Males	0	0	0	8	6	1

Note. Bold = target word, n = 15 possible for each group.

Gender	You	make	the	**best**	spring	rolls	springrolls	No Emphasis on Any
Japanese Females	0	0	0	11	1	1	1	1
Japanese Males	0	0	0	10	3	1	0	1

Note. Bold = target word, n = 15 possible for each group.

Gender	I	age	**six**	of	them	No Emphasis on Any
Japanese Females	0	0	13	0	0	2
Japanese Males	0	0	14	0	1	0

Note. Bold = target word, n = 15 possible for each group.