The Intelligibility of Thai-Accented English Pronunciation to Native Speakers and Non-Native Speakers of English

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April 2017

ABSTRACT

World Englishes (Kachru, 1985) and English as an International Language (EIL) are grounded in the concept of multiplicity. Such proliferation of non-native varieties of English leads to several controversies including the intelligibility of its speakers. Although the concerns have been continuously addressed in EIL research, the focus was mainly toward major ESL accents. Thai English language educators know very little about the scenario of Thai English in relation to its use in international settings. This study explored the macro-sociolinguistic characteristics of Thai English of which the underlying investigation: what level of Thai accentedness in English pronunciation can be considered intelligible to international users of English and what pronunciation features instances result in intelligibility failure, was undertaken. Thai-accented English spontaneous speech with different levels of accent was measured for overall intelligibility using a transcription task performed by the listeners from a variety of different L1 backgrounds. Intelligibility level was measured by the accurate transcription of the recorded speech while the errors in transcription were phonetically analysed to ascertain which phonological features of Thai English led to a decrement in intelligibility. With the concept of Lingua Franca Core (LFC) (Jenkins, 2000), these features must be the focus in teaching English for communicative purposes.

Analysis of the results revealed that the interaction between level of accent and intelligibility affected the different L1 groups in a diverse manner, especially non-native speakers. The salient features identified as posing the highest threat to international intelligibility were cluster simplification, consonant devoicing, lack of final consonant released, and fully stressed unstressed vowels. This research also discovered that intelligibility predictors as gained from subjective methods as questionnaires displayed an unstable correlation to the actual intelligibility as measured by the objective tests.

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work would never have been completed.

To all my Thai Yorkers friends, I extend my thanks for always staying beside me and CC throughout these dissertating years.

My beloved mother for being supportive, loving, and caring. I would never be the person I am today without her. My father who believes in my potential and brought me to this incredible experience of life. I also owe so much to my dearest daughters, Cake and Cream, for being my greatest source of joy and happiness and above all, for being my life's meaning, gearing me and pushing me to reach the final page of this dissertation.

Last but certainly not least, I would like to sincerely thank all my research participants.

AUTHOR'S DECLARATION

I hereby declare that this is the presentation of original work and I am the sole author. This work has not previously been presented for an award at this, or any other, university. All sources are acknowledged as references.

CHAPTER 1

INTRODUCTION

1.1 Background of the Study

The proliferation of English globally has resulted in the rapid diversification of English use throughout worldwide nations as an international language, which drives its status as the world's dominant language. In the context of Thailand, despite her lack of direct colonial experience and the scarcity of an intra-functional role of English in the country, the significance of English use is becoming more prevalent due to globalisation. English is now the representation of modernity (Huebner, 2006), capitalism, a new emblem of imperialism, and the main carrier of the American economy and technological hegemony (Holborow, 1999). The consequence of the interplay between local and global forces not only make English a socioeconomic advantage but also shape English to be "a compulsory requirement" everywhere including Thailand (Nunan, 2003, p. 65).

Considered a result of both preceding British colonial expansion, and globalisation, English has been adopted by speakers from various L1 backgrounds. The diversification of English into numerous varieties underpins the concept known as World Englishes (WE), and furthermore resulted in the ascendency of English as an International Language (EIL). Kachru (1985), a pioneer scholar in the WE field, proposes his view of WE as entailing the pluralism of English use, reflected by his three concentric circles of English, which since has been used as the standard framework of World Englishes studies. It must be noted, however, that Kachru's (1985) classification of the Inner Circle (norm providers/ English as a Native Language: ENL countries), the Outer Circle (English as a Second Language: ESL countries), and the Expanding Circle (English as a Foreign Language: EFL countries) was considered tentative at that time. The sociolinguistic development of WE through rapid globalisation has made it such that the barriers between each circle are more permeable than initially anticipated, confirming his reservations. In

fact, the Kachruvian concept of WE differs somewhat in orientation to the conception of EIL which endeavors to be more inclusive and conveys the idea of English as the global medium for communication and promotes the drive towards an international standard of usage. Irrespective of their differences, both concepts signified a paradigm shift in perception of the current use of English globally, from Linguistic Imperialism (Phillipson, 1992) to the conception that English does not belong to specific groups of people anymore, even its native speakers. English is ubiquitous, as the language of international communication it is used by both bilingual (considered non-native speakers of English in this context) and monolingual (native) persons similarly. In actuality, the rapid post-colonial precipitation of English has resulted in a predominance of bilingual speakers, with numbers greatly outweighing monolingual speakers (Cook, 1999). Recognition of this historically unique position of English highlights the requirement for a reconceptualisation of English in relation to its global use and the legtitimisation of non-native speaker varieties.

Importantly, in the international use of English, resulted from its geoegraphical and demographical spread, those from different L1s manifest indigenous sounds in their production of English. NNS Englishes are considered to show the most divergence in terms of pronunciation (Jenkins, 2000, 2002) due to the pervasive patterns of the speakers L1. Such foreign accent is the result of the assimilation of characteristic L1 phonological features into the articulation and pronunciation of L2 speech. These non-pathological speech patterns acquired in English as L2 have been demostrated as problematic for international communication (Gorlach, 1999; Jenkins, 2000, 2007; Kirkpatrick, 2010; Major, 2001). This highlights a pivotal concern in EIL communication, as English has taken on many sociocultural forms and is no longer primarily used for communication with English native speakers (NSs) but between NSs and English non-native speakers (NNSs) as well as between NNSs themselves, how can the disintegration of English into unintelligible dialects be avoided (Trudgill, 1998, as cited in Jenkins, 2002).

Consequently, one of the overarching issues on the EIL stage is *intelligibility*. Although the construct of intelligibility has various conceptualisations in research, fundamentally, it refers to the idea of how easily speech can be recognised and is influenced by various factors such as the proficiency of language users and linguistic elements (Nelson, 2011). Regarding the latter, there is consensus among EIL academics (e.g. Jenkins, 2000; Kirkpatrick, 2010; McKay, 2002; Seidlhofer, 2004) that differences in pronunciation are the most prominent factor affecting mutual intelligibility. In the forum of EIL pronunciation, the challenge relates to what level of intelligibility can be considered acceptable across different varieties of English (McKay & Bokhrost-Heng, 2008). The effect of differences in L1 background on English pronunciation led to international intelligibility failure and communication failure as elucidated by numerous studies in the field, the Interlanguage Talk Data (ILT) in Jenkins (2000) and the investigation of ASEAN community English talk of Kirkpatrick (2010).

In addition to the concerns surrounding intelligibility, implicit in the discussion of English as the world's language is the issue of its pedagogy (English Language Teaching: ELT). Confined to EIL pronunciation teaching, standard English or L1 English as General American English (GA) or Received Pronunciation (RP) is given impetus as the recommended teaching model for English learners as attached to the native fallacy concept (Phillipson, 1992). A consideration of the EIL framework purports that English NSs or norm providers themselves are no longer the main interactors for EIL users. McKay (2002) postulates that with the global use of English today, the predominance of native speaker models in ELT pedagogy and research should be re-addressed as the context of English use now has progressed from the traditional canonical form of language, or English as a Foreign Language, where the goal of communication is with NSs of English. Rather, in the context of EIL, educators and researchers are obliged to carefully examine the implicit goal of learners within their specific context as a basis for determining learning goals. Given the ever-increasing cross-cultural communication between the three circles,

teaching to aid competency in their own pragmatic norms and to facilitate understanding of the pragmatic norms of other circles is imperative. McKay (2002) further notes that all dialects or varieties of a language are equivalent, that all variants and changes are appropriate in their particular context, and the new ideological orientation that anyone can own English should be celebratory. As English is now an international language, it should not be shackled to the model of native speaking countries and thus a reformulation of ELT is required which recognises the pluricentric nature of English.

Previous research in EIL intelligibility and pronunciation has been conducted from a variety of perspectives which has led to a disparity in definitions of the key meaning of intelligibility. The current study explored intelligibility in terms of **phonological intelligibility** of Thai-accented English. That is, how Thai-accented English pronunciation was perceived by participants from different L1 backgrounds, how their perception deviated from the production target, and which phonetic elements were vital in their perception. How participants understood (semantic function) or interpreted (pragmatic function) the speech was omitted from the scope of the study. Using participants feedback through transcription tasks, the current intelligibility research makes predictions regarding which sound features are communicative threats to phonological intelligibility and should, therefore, be prioritised in pronunciation teaching within the EIL community. Additionally, results will be used to inform the basis of a Thai EIL pronunciation core for implementation both in EIL and ELT frames.

1.2 Statement of the Problems and Research Gap

The review of literature highlighted that a considerably high number of research studies put the onus on communication of English from the reactions and perspectives of NSs and NNSs as attached to the traditional method of English as the Foreign Language (EFL) (Hahn, 2004; Narith, 2009; Pongpairat, 2011). However, research on communication between groups of NNSs themselves, though gaining more attention, is relatively lower. Even given the increased attention, there is still a dearth of research

regarding Thai-accented English and EIL intelligibility. Furthermore, the question of accentedness on intelligibility has been reported with contradictory results. For example, some EIL authorities; for instance, the most proactive one as Jenkins (2000), claim that native speakers of English were not always found the easiest to comprehend. However, a response to this claim is grounded in a critique of the methods and participants chosen, that the claim was contingent on the participants and research methodology used in each research study. In a similar vein, researchers have speculated that familiarity to an accent or shared-L1 benefits provided an advantage in understanding speech from shared L1 speakers on L2 (Bent & Bradlow, 2003 Hongyan & Van Heuven, 2007; Smith & Bisazza, 1982) while others did not show significant evidence for such claims (Major, Fitzmaurice, Bunta & Balasubramania, 2002; Munro, Derwing & Morton, 2006; Harding, 2012). Research to date is not only lacking a coherent narrative regarding the role pronunciation plays in intelligibility, but also which features are considered salient for international intelligibility. Thus, the current research aimed to investigate intelligibility of Thai-accented English with different levels of accentedness among different L1 groups of participants; English native speakers, Thai native speakers, and non-native speakers who had neither English or Thai as L1. The research aims to close the gap found in the literature regarding the association between accentedness and intelligibility in terms of the effect of strength of accent, shared-L1 benefits, nativeness of a language in foreign-accented speech, and non-nativeness of a language and non-shared L1 in foreign-accented speech. Additionally, the study examined the assertion that there is "*No need to become more like native English speakers in order to be understood better*", as proposed by uncountable numbers of EIL authorities such as Brown (1990), Jenkins (2000), and Kirkpatrick (2010), in relation to its legitimacy when applied in the context of EIL.

In addition, regarding English language pedagogy and assessment, the concepts of "teachability" and "learnability" as coined by Jenkins (2000: 132) identified native-like pronunciation as unattainable for L2 learners. She further postulated that such a reliance

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on a utopian view poses a burden on learners' overall ability to attain communicative competence. Thus, such reliance on an assessment against native-like English is considered inadequate and a move toward mutual accommodation adopted (Taylor, 2006). Therefore, a minimum standard of proficiency should be established to safeguard intelligibility allowing for the use of some L1 pronunciation features provided they are not a threat to intelligibility. Through the personal experience of the researcher as an English lecturer for Thai learners in Thailand for more than a decade, this claim is absolutely agreed. To drive the learners to produce native-like speech seems to be impossible and judging their ability against a native-like standard is unfair. Rather, given the emergence of English in international cross-cultural communication, communicative considerations regarding how well speakers can be understood by authentic interlocutors in EIL should be applied. Specific pronunciation features of Thai English for international intelligibility should be established for focus in EIL teaching to aid the realisation of English as a heterogeneous language. In Jenkins' (2000) Lingua Franca Core (LFC), which is the key rationale for this research, with the compliment of the Outer Circles, fostered other major Expanding Circles accents to establish a pronunciation core. However, the data collected did not include Thai English pronunciation. With the rapid growth of new varieties of English across the world, it is impossible for any researcher to pedagogically expose English to each single accent of English. It is thus considered the responsibility of the local EIL educator to research the issue within their own context.

Though there are sporadic reports on comparative studies of Thai and English phonology (Kruatrachue, 1960; Luksaneeyanawin, 2005; Smyth, 1987), there has been very little systematic, experiential, and experimental study on Thai English problematic pronunciation features for EIL intelligibility. Some indigenous features may impede intelligibility while others serve as indicators that speakers are Thai without causing interference. A consideration of these can serve to indicate which features of pronunciation are most likely to lead to a decrement in intelligibility. The ramifications of such analysis

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would allow local educators to reconceptualise EIL teaching in its specific context and support the move toward an endonormative teaching of English as L2.

Lastly, there is a lack of consensus surrounding the accepted methods for measuring intelligibility. Research to date has commonly employed objective tests; cloze test and dictation such as Matsuda, Chiba and Fujieda (1999), and transcription tasks such as Nejjari, Gerritsen, Van der Haangen, and Korzilius (2012) believing that accurately perceived sounds are indicative of intelligibility levels. Others have opted for subjective ratings (Lu, 2007) such as questionnaires and interviews under the guise that impressionistic reports can elicit levels of actual intelligibility. Samar and Metz (1988) found that intelligibility measured through an objective test (written assessments) provided a more accurate result than a subjective test (rating scale judgements). Therefore, it is worth examining the association between findings gained from the disparate intelligibility measuring methods to ascertain whether it is possible for intelligibility to be measured by other means or predictors. In the current study, the participants' responses (ratings) were cross-checked with actual intelligibility scores to determine if there was any correlation between subjective and objective test results.

1.3 Objectives of the Study and Research Questions

The aim of the current study is threefold. First and foremost, the researcher attempted to examine the intelligibility of varying strengths of foreign accent (Thai-English) to different groups of participants from various L1 backgrounds to investigate the association between accent and intelligibility, as well as to establish a baseline between *native-like* pronunciation and L1 preserved accent for increased intelligibility. Second, though this is not primarily a phonological investigation, the research aims to raise the instances of Thai-accented English features that result in international intelligibility failure, the so-called Thai EIL pronunciation core, for improving Thai learners' international communicative skills for intelligibility purposes. All pronunciations of Thai English that are considered problematic for international intelligibility are included in the core which

can be used to establish guidelines for teaching and assessing EIL pronunciation in Thailand and other regional countries where basic phonological characteristics are shared; such as syllable timed, tonal language and lack of consonant clusters. Third and last, this research determines to provide information regarding the intelligibility predictors gained from subjective measurements and is envisaged to be beneficial in informing the methodology of future studies in selecting the appropriate tools for intelligibility research.

In response to the objectives mentioned, the conceptualised research questions are as follows.

RQ1. To what extent is the level of Thai accentedness (weak, moderate, and strong) in spontaneous English speech associated with intelligibility level of the following groups of participants as measured by the accuracy of their transcription of the tested speech?

a)   Native speakers of English (NSs).

b)   Non-native speakers of English with non-Thai L1 (NNSs).

- Arabic, Chinese, Japanese, Spanish, and Portuguese.

c)   Non-Native Speakers of English with Thai L1 (Thais).

RQ2.   Which specific pronunciation features of Thai English tend to be problematic features in intelligibility for these groups of English participants as measured by the errors in their transcription of the tested speech?

RQ3.   To what extent are participants' attitudes, familiarity to international accents of English, and perceived intelligibility as measured by ratings in the questionnaires with 6-point Likert scale, associated with actual intelligibility performance?

1.4 Significance of the Study

To date there are insufficient studies concerning Thai English. The data collected in the current study can contribute to EIL pedagogy and Thai ELT research in several aspects.

In addition to the investigation of Thai-accented English and its global intelligibility, where the listeners and their L1 should be oriented, the effect between

English native speakership and shared-L1 benefits on accented English speech are tested providing better and more nuanced understandings of the interactions in EIL. Although literature indicates that both are considered an aid for intelligibility, a comprehensive comparison of the two effects has not been conducted. A significant contribution of the present study relates to the Thai EIL pronunciation core. It is the first time that a Thai EIL pronunciation core has been experimentally explored and analysed which is considered extremely innovative for Thai EIL pedagogy. This core can be used for teaching and to assess English pronunciation in Thailand and any other countries where the L1 phonology is similar, due to a likelihood that there will be congruence in pronunciation errors. In turn, a bifurcation of the core would be its implementation for developing an accent familiarity skill for NSs and other NNSs who wish to learn more about phonological features that result in intelligibility failure in EIL communication with speakers of Thai and similar phonology systems – at least all South East Asian countries. The features of the core should, therefore, be disseminated to both speech producer and receptors within the EIL context. The conclusions of this study, although pertinent to Thailand, can contribute to the growing body of literature regarding the interplay between accentedness and intelligibility. Furthermore, in contributing to this field it can aid the establishment of a minimum proficiency level for international communication.

In line with the literature, it is agreed that intelligibility measurement is a complex and convoluted process. Several studies have attempted to isolate the sounds that were implicated in intelligibility breakdown and simply compared the problematic sounds to the standard reference pronunciation (Grant & Seitz, 2000; Miller, Heise, & Lichter, 1951; Nygaard, Sommers, & Pisoni, 1994; Schiavetti & Kent, 1992). Researchers then surmised of possible discrepancies in utterances that may have led to the participant's failure in recognition via their subjective phonological analysis of the typological distance between the two languages, demonstrated by even the most influential researchers in the field such as Jenkins (2000) and Kirkpatrick (2010). Of the literature reviewed, very few works

incorporated the actual feedback or acoustic perception and reflection of the participants: how the sounds were perceived and what features differed from targeted by speakers. In the present study data was drawn from participants orthographic and pseudo transcriptions. By utilising two different methods of transcription, all sounds as actually perceived by the participants were analysed comparatively against the speaker utterances and the standard reference pronunciation. The methodology employed in the present research is considered innovative and rigorous in the field of intelligibility measurement. It follows that this methodology can be further developed in future research. In addition, the research investigated the efficacy of subjective methods as indicators for actual intelligibility. This research did not intend to explore the two variables (intelligibility predictors such as attitudes and intelligibility scores) in terms of sociolinguistic effects as generally investigated in EIL (Derwing & Munro, 1997; Kim, 2008; Munro & Derwing 1995a, 1995b). Rather, the results obtained will shed more light on the reliability of intelligibility research methodology and the selection of the most appropriate tool to measure intelligibility: the correlation of the data gained from subjective test (holistic/ signal independent test) vs objective test (analytic/ signal dependent test).

1.5 Key Theoretical Concepts

Below are the key theoretical concepts that contributed to the framework that informed this research.

1.5.1 World Englishes and English as an International Language

The World Englishes (WE) and English as an International Language (EIL) ideologies underpin the framework of the current study. The concept is rooted in Lingua Franca which is defined in a sociolinguistic context, as a language that is common to or shared by many cultures and communities at any or all social and educational levels and used as an international tool (McArthur, 2002, p. 2). The contemporary context of English as a diversified global language has resulted in localised varieties of English, which

contributes to an increased misunderstanding between English users due to various differences existing between language varieties (Nelson, 2001). Among the differences in linguistic units of English speakers of different L1, EIL authorities such as Jenkins (2000) and Munro and Derwing (1995a) raised the differences in pronunciation as the most evident problem for mutual intelligibility of EIL users because pronunciation is the fundamental linguistic aspect encountered in communication. In addition, when producing any foreign language, non-native speech can vary through strength of accent and the concept of accentedness can be difficult to define. Furthermore, the increased recognition and legitimisation of nativised varieties of English will serve to further compound an already ambiguous concept. Auditory perception of a foreign language is likely to lead to judgements about whether the speaker is native or non-native and strong accents have been revealed as interfering with intelligibility (Flege, Bohn, & Jang, 1997). The strength of an accent or accentedness is related to the degree of non-pathological deviation from NS norms. Studies investigating intelligibility of international varieties of English usually fit into the realm of accent studies, as many are based on which accents are more intelligible according to the groups of participants. The present research argued along similar lines and attempted to highlight how much Thai English pronunciation, as spoken by Thais, deviated from the general standard pronunciation.

One unavoidable issue to be mentioned in EIL is pedagogy. In the scope of EIL, McKay (2010) notes that ELTs direction has dramatically changed in the past forty years – from English as a foreign language (EFL) to EIL (p.26). Burns (2005) postulates that "To be an English teacher today is to play an inevitable part in this globalising enterprise, to recognise new areas for inquiry, now raised for the perhaps the first time in the long history of ELT" (p.1). She further stated that the English language is now the tool for communication globally especially in bilingual and multilingual settings rather than the EFL context of the past. With such impacts, EIL teaching requires different pedagogical approaches and EIL teachers' sense of plausibility be considered paramount. In sum, the

EIL teaching and research goal must be considered within the endonormative context of the native speakers.

The concepts of WE and EIL, as briefly raised, are considered the main theoretical framework of the current study. The next section addresses the Lingua Franca Core as related to the rationale for establishing the Thai EIL pronunciation core of this study.

1.5.2 Lingua Franca Core (LFC)

The non-native English model known as Lingua Franca Core (LFC) of Jenkins (2000) was believed to help reduce the workload for English teachers and learners. Due to the inclusion of English phonological features as threats to international intelligibility, the LFC can be utilised in EIL teaching. The concept allows non-native speakers of English to use English according to their L1 linguistic norms provided they do not negatively affect intelligibility. According to the concepts of teachability and learnability, Jenkins (2000), though proposing the importance of nuclear stress, discusses the acquisition of prosody as going beyond classroom teaching, that it requires exposure, for a considerable period, to English native speaking. Although her work has been criticised as too vague and too simplistic to be considered universal of the pronunciations of non-native speakers of English; especially regarding vowel sounds (Trudgill, 2003 as cited in Seidlhofer, 2003), it was believed that the use of the LFC would enable linguistic items to be successfully taught for international purposes (Walker, 2010). In general, for teaching purposes the advantages and disadvantages of the LFC can be drawn into two main points.

First, according to Quirk (1990), it was believed that promotion of non-native Englishes would lower the ELT standard, in that any sounds that learners produced would be permissible. Also, without a standard model, it has been considered impossible to teach learners. Regarding this issue, it was argued that by definition, pedagogy itself requires a description. Hence, standard or native English can always be central in teaching but there should be consideration of the students' endonormative context. Second, it was assumed

that both teachers and learners of the English language prefer native speakers. It was interesting, however, that much of the academic research indicated that native English teachers favoured international intelligibility over non-native English teachers (Kachru, 1992). The discussion surrounding ELT pedagogy recognises the importance of considering the local non-native milieu of those who are the recipients of such teaching and promote their role as active receivers of knowledge. Crucial to this debate are the repercussions of an obdurate attachment to NS pronunciation models as it has been demonstrated that students are strongly influenced by the model and method adopted by their teachers (Richards, 1996). In order to move away from the linguistic dominance of NS models and negative connotations of non-native accents, as termed "the colonial construction of other" by Pennycook (1998, p. 22), it is imperative that an awareness of the status of English as a global language is raised among students, in tandem with a change in the conceptualisation of ELT pedagogy.

The details of LFC including its implementation, criticism, core and non-core features are further elaborated in Chapter 2.

1.5.3 Intelligibility Research and Measurement

Intelligibility as a concept is shown to be ever increasing in second-language pronunciation research (Munro & Derwing, 2011), however criticisms of the concept have arisen, with some viewing it as a politically-charged buzzword (Rajagopalan, 2010). Such criticisms can be understood as rooted in the intangibility of intelligibility, that to date, it has been defined variously and its measurement has been demonstrated as complex, difficult and near impossible (Derwing & Munro, 1997). A comprehensive review of the literature demonstrated that intelligibility has been used interchangeably with the concepts comprehensibility and interpretability even though the three elements are not the same. In addition, phonological intelligibility was seldom separated from perceived intelligibility and the two were over-assumed as one finite form, resulting in confusing reports. To address the confusion in literature it is crucial that, first and foremost, the definition of

intelligibility, especially its operational definition, is clearly defined. Richards and Schmidt (2002, p. 263), defined intelligibility generally as "the degree to which the message is understood", resulted by several factors including; accent and intonation, listener's ability to predict parts of the message, the location of pauses in the utterances, the grammatical complexity of sentences, and the speed with which utterances are produced. Jenkins (2000, p. 78) defines EIL intelligibility as the "negotiation of meaning" and heavily emphasises accommodation between interlocutors. Furthermore, Kirkpatrick (2007, 2010) stated that English, as produced by non-native speakers, tended to be more intelligible among non-native speakers than that produced by native speakers. However, Trudgill (2003) argues that, in fact, there are several research articles which reported that native speaker Englishes have not been found more difficult to understand than non-native Englishes. McKay and Bokhorst-Heng (2008) discusses the core of this controversy as relating to the level of intelligibility perceived as acceptable across different varieties of English.

As evidenced, intelligibility was considered another prominent factor to be addressed in EIL relating to the level of intelligibility users from each English circle possess for different pronunciations of English. As pronunciation is a continuum process (Flege, 1980; Major, 1987), at what specific point in the continuum can language be claimed intelligible? What specific features of different English pronunciation resulted in intelligibility problems among native and non-native speakers and hence should receive more focus for teaching and learning English? EIL researchers and teachers must consider these factors to better aid learners in mastering English for communicative purposes. The current study examined EIL intelligibility in the aspect of phonology. That is, how sounds were perceived by the participants, regardless of their comprehension and interpretation of the sounds or words, to determine which Thai English utterances could be recognised by different participants and which sound features were a threat to phonological intelligibility.

The clearly defined scope of intelligibility measurement allowed for the development of a systematic and effective measurement process.

1.5.4 The Comparative Phonology Studies of Thai and English

Since Thai-accented English is the focus of the current study, the examination of Thai and English phonology systems is unavoidable. In short, given that Thai is a tonal and syllabe-timed language and English is intonation and stress-timed heavily affects Thai speakers pronunciation of English. The common and well-known pronunciation of Thai English such as the lack of vowel reduction and stress are all resulted by these phonological discrepancies. Thai speakers are generally unaware that vowel reduction and stress are the distinctive features of the English language (Goddard, 2005).

Luksaneeyanawin (2005) postulates that there are three salient phonological problems regarding segmental features between Thai and English which lead to the pronunciation of Thai English. These three problems are 1) systematic difference, 2) structural difference, and 3) differences in phonetic realisation. In brief, systematic difference refers to the differences in type and number of sounds existing between languages. For example, in Thai, there are only three fricatives, /f, s, h/, but in English there are nine as /f, v, ð, θ, s, z, s, z, h/. Concerning structural differences, they are the differences in syllable structure and sound sequencing. To elucidate, both Thai and English have the lateral alveolar /l/ sound, but this sound is only found at the initial position of the syllable in Thai while it is found in both the initial and ending syllables of words in English. Finally, the difference in phonetic realisation is the further variance in phonetic details of certain sounds, for example, /r/ is considered trill in Thai but rhotic in English. Regarding suprasegmental features, Luksaneeyanawin (2005) contends that stress in English and tones in Thai play a crucial role in the production of Thai English pronunciation. In Thai, stress always falls on the last syllable of the word, resulting in the same oral production in English. Also, as Thai is a tonal language, tone has a major influence on Thai English pronunciation. In Thai English pronunciation, tone assignments

are influenced by the syllable structures, that is, a live syllable (sonorant ending) receives a mid or a falling tone while a dead syllable (obstruent ending) receives a low or a high tone.

According to the literature review, there is coherence throughout the research that the differences between English and Thai phonology lead to the pronunciation of Thai-accented English that results in communication failure.

1.5.5 Intelligibility Predictors

The final major element informing the current study is the investigation of the correlation between intelligibility data gained via subjective and objective methods. Three intelligibility predictors: attitudes, familiarity to international accent in general, and perceived intelligibility were selected to test the aforementioned correlation. Language **attitudes** are the attitudes which speakers of different languages or language varieties have towards other languages or their own. Attitudes can be informed by impressions of linguistic difficulty or simplicity in learning, the degree of importance, elegance, and social status (Richards & Schmidt, 2002). There is a long-standing conviction regarding the superiority of native speakers as the ideal language users (Kirkpatrick, 2007), which undervalues the pluricentric nature of English in the contemporary world. Jenkins (2007) reviewed several empirical studies concerning the attitudes of English language teachers and learners towards different varieties of English, and the majority demonstrated that a relationship did exist between attitudes and varieties. An individuals' perception of a language cannot be simply divorced from attitudes, in fact, the two are symbolically linked (Jenkins, 2007). Furthermore, Wolff postulates that the perception of people towards an accent undoubtedly relies on intelligibility but should also be considered in tandem with language attitudes (1959, as cited in Jenkins, 2007). He hypothesised that there were factors beyond the implication of phonology in the perception of accent. The issue of **familiarity** towards an accent and its facilitation in intelligibility has been extensively researched, and as such it does not warrant further examination. Investigated in this research was familiarity to an international accent in general, that how far the claim of

familiarity to international linguistic exchanges can reflect higher intelligibility of a distinct L2 accent. The issue of familiarity to general international accents of English is considered novel and was not investigated in any of the research reviewed. Regarding **perceived intelligibility**, intelligibility was conceptualised as the recognition of the sounds in the utterances while the conceptualisation of comprehensibility referred to how well the utterances were understood by the participants. It must be noted that the use of these two terms in intelligibility literature is inconsistent. In this research, perceived intelligibility is the holistic judgment of how easy it was to perceive the utterances and the data obtained was cross-checked with actual intelligibility. Comparable to other issues discussed, previous research was found to have conflicting results; some identified a positive relationship between familiarity and intelligibility, others a negative relationship, while others found no relationship at all.

The above is a discussion of the five key theoretical concepts informing the ideology of the current study. The relevant issues pertaining to each concept are further elucidated alongside a discussion of the complex ramifications in Chapter 2.

1.6 Methods

A brief introduction of the methodology employed can be drawn as follows. The present study investigated the intelligibility of Thai-accented English pronunciation with three levels of accentedness (weak, moderate, strong) in three different groups of participants (English NSs, NNSs: non-Thai, and Thais, $n = 45$). It also examined pronunciation features that were found to be a threat to intelligibility for establishing a Thai EIL pronunciation core. Other possible indicators for intelligibility measurement were also explored. Thai English speech with different levels of accent was played to the participants to transcribe using orthographic and pseudo transcription. The intelligibility scores were calculated based on the words accurately transcribed in each speech sample. A mixed between - within subjects ANOVAs analysed the association of intelligibility scores of each group of participants through conditions (level of accent). Errors in transcription

were phonetically analysed and compared to the actual pronunciation in the sounds and the reference standard pronunciation to find the problematic non-standard pronunciation features that led to intelligibility failure. Other possible indicators of Thai English intelligibility such as attitudes, familiarity to international accents of English, and perceived intelligibility were measured through questionnaire ratings (6 point-Likert Scale). The relationship between the variables was tested by correlation coefficient: Spearman's Rho.

1.7 Definition of Key Terms

For the sake of consistency throughout the research, a list of key terms and their operational definitions for the purposes of this study are included below.

1.7.1 Accentedness

Given the pervading nature of L1 speech patterns on L2 articulation, accentedness is almost unavoidable and can vary considerably. Accented speech is the pronunciation of a foreign language with substitutions of non-native pronunciation features transferred or interfered from the first language of the speaker (Major, 2001). Accent is a hallmark of non-native speakers of a language. That is non-native language speakers demonstrate more variables in speech than native speakers, and a foreign accent is acoustically perceptible on different levels. Accent can be perceived as strong if it contains salient features of L1, and accentedness deals with the strength of the accent in the foreign speech. In this study, the pronunciation of English by Thai L1 speakers was investigated which is henceforth called English with Thai accent or Thai-accented English.

1.7.2 English Standard Pronunciation

English pronunciation as produced by native speakers was used as the reference for the comparison of Thai-accented English. Carnegie Mellon University Pronunciation Dictionary and Longman Pronunciation Dictionary were used as the standard pronunciation reference. There was no intention to suggest what was correct or acceptable by the pronunciation. Intelligibility of the speech was the pure focus of the research.

1.7.3 Intelligibility

For the purposes of this research, intelligibility was conceptualised as the recognition of utterances and was based on acoustic signals and phonological factors, rather than semantic and pragmatic function which are related to comprehensibility and interpretability, respectively. As stated by Smith (1992) intelligibility, comprehensibility and interpretability are different. This research solely investigates intelligibility as *phonological intelligibility*. That was, to what extent the sounds in the utterances were perceived by the participants and were examined in terms of deviations from the targeted pronunciation of the speaker.

1.7.4 Lingua Franca Core (LFC)

The proposal cited in *The Phonology of English as an International Language* (Jenkins, 2000) emphasised that the international pronunciation of English should be shifted from native speaker varieties to a consideration of what non-native varieties have in common. LFC lists the pronunciation features that cause breakdowns in NNSs-NNSs understanding, with a specification of how they need to be pronounced to facilitate intelligibility. Attention need not be given to features outside the LFC because they were not considered an intelligibility threat.

1.7.5 Native Speakers of English (NSs)

NSs refers to those having English as their mother tongue.

1.7.6 Non-Native Speakers of English (NNSs)

NNSs are those not having English as their mother tongue and when mentioned as the participants in this research, were not Thai but from another selected L1.

1.7.7 Non-Standard Pronunciation Feature

Non-standard pronunciation features are those features identified as deviated from the standard reference pronunciation.

1.7.8 Problematic Pronunciation Feature

The pronunciation features identified from transcription data as failed to be intelligible on the first encounter which were further analysed leading to their acceptance or rejection as a standard pronunciation feature.

1.7.9 Segmentals

In speech, segmentals are a discrete unit that can be identified physically or auditorily in a stream of speech. They are separate and individual as consonants and vowels. The contrastive elements are prosody or suprasegmentals such as tone and stress which cannot be discretely ordered. This study investigated pronunciation in terms of segmentals; namely consonants and vowels only.

1.7.10 Thai EIL Pronunciation Core

The proposal of English pronunciation features that should be implemented in teaching English as an International Language for Thai learners due to their identification as a threat to intelligibility. Speakers with a Thai accent can pronounce the sounds that are excluded from the core with comfort because they did not negatively affect intelligibility of speech. This core can also be applied for the learners of English whose L1 shares similar phonological characteristics.

1.8 Basic Assumptions of the Study

This study relied on the assumption that intelligibility or sound perception was not identical for participants with different L1, in particular to the aspects of nativeness of the language, non-nativeness of the language, and shared-L1 benefits (Best & Tylor, 2007; Munro *et al.*, 2006; Munro, 2008). Shared L1 participants (Thais) were assumed to find the speech the easiest to understand, followed by English native speakers, then English non-native speakers. In addition, it was noted that intelligibility could be reflected through other possible indicators, however, the degree of indication can vary depending upon the type of measurement used. It was hypothesised that subjective ratings in perceived intelligibility would exhibit a positive correlation to actual intelligibility, followed by attitudes, and familiarity to international accents of English. Regarding Thai English

pronunciation features to be included in the Thai EIL core, it was conjectured that the main discrepancies between Thai and English phonology systems were the sounds that led to major intelligibility failure; for example, lack of fricative sounds in Thai, cluster simplification, and lack of reduced vowels.

1.9 Research Organisation

This dissertation is thematically organised as follows:

Chapter 1 is an overview of the dissertation, presenting the context of the problem, its key theoretical framework and the focus of the project.

Chapter 2 reviews related literature that the dissertation incorporates, mainly in EIL phonological intelligibility study. This chapter conceptualises and problematises the concept of EIL and relevant controversial issues in the field.

Chapter 3 outlines the methodological framework and describes the data collection method pertaining to the research site, participants, and transcription procedures, concluding with the results from the data analysis of the pilot studies.

Chapter 4 presents the data analysis and research results related to each research question: the association of different levels of Thai accentedness on international intelligibility of different groups of L1 listeners, Thai EIL phonological core as threats to intelligibility, and the association of possible intelligibility predictors and the actual intelligibility scores.

Chapter 5 interprets the obtained results in light of relevant literature. The discussion and interpretation of data is organised into three key discussions. The first is the interpretation and discussion of empirical results in relation to the association of different levels of foreign accent in English pronunciation to the perception of different L1 groups of listeners. The issues borne from the interpretation of this section are 1) association of shared L1 in accent familiarity on intelligibility, 2) association of nativeness of the language on accented speech in language intelligibility, 3) association of non-nativeness and non-shared L1 on foreign accented speech, and 4) debates in the rejection

and acceptance of native-like pronunciation for EIL intelligibility purposes. The second section discusses the phonological analysis of Thai and English and the identified pronunciation features that led to intelligibility failure in order to establish minimum standard pronunciation features or Thai EIL pronunciation core. The concluding section is the discussion of additional variables that act as predictors for intelligibility using the data gained from rating methods; attitudes, familiarity to international accents, and perceived intelligibility.

Chapter 6 revisits core parts of the study, summarises the research findings, highlights the main discussion, offers implications in terms of future research, and pedagogical concerns.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

To cast light on the concepts and ramifications of all relevant issues involved in this study, this chapter provides a critical analysis of the literature. The chapter will discuss theoretical frameworks, issues, and research on intelligibility converging on the impact of accentedness on different L1 interlocutors as a threat to international intelligibility. In general, World Englishes (WE) has focused on English of the Outer Circle or ESL countries, while English as a Lingua Franca (ELF) and English as an International Language (EIL) have focused on the Expanding Circle. As Expanding Circle speakers primarily use English internationally rather than intra-nationally, ELF and EIL research has attempted to identify the core phonology of English necessary for mutual intelligibility among L2 English speakers with a variety of L1s, the rationale of the Lingua Franca Core (Jenkins, 2000, 2007). However, due to the unprecedented spread and diversification of English usage worldwide, it would be impossible to exhaustively research the complete body of existing English varieties for their phonological communication cores. As a result, Thai English educators know very little about empirical Thai English phonological features that impede international intelligibility. Scholars have recommended re-evaluating the core assumptions of LFC research to better reflect the use of LFC in endonormative varieties of English.

This chapter examines the following topics in reference to the current study: 1) Current Issues in World Englishes (WE) and English as an International Language (EIL), 2) The Critical Role of Pronunciation in EIL, 3) The Justification of EIL Intelligibility Definition, 4) Issues and Criticism in LFC, 5) The Association of Accent and Intelligibility, 6) Intelligibility Predictors, 7) Issues and Trends in Intelligibility Research, and 8) Systemic Review of Thai-accented English Phonology.

2.2 Current Issues in World Englishes and English as an International Language

The rapid and pervasive spread of English has resulted in what appears to be the dismantling of standard English into a multitude of regional varieties (Schneider, 2007). According to the concept of "the pluricentricity of the language and its cross-cultural reincarnations" (Kachru, 1985, p. 447), English has been globally assimilated into diverse local cultures. Intrinsic to the process of assimilation is the amalgamation of English with the local varieties sociocultural and sociolinguistic norms. English has been cleverly branded as the language of politics, business, and development through a system of both material and institutional structures, namely the World Bank and IMF or International Monetary Fund (Phillipson, 1992), which further promotes and maintains its status as the dominant global language. The perpetuated position of English as the language of capitalism, a new emblem of imperialism, and the main carrier of the American economy and technological hegemony (Holborow, 1999) maintains it discursive power. The consequence of the interplay between local and global forces not only make English a socioeconomic advantage but also shape English to be "a compulsory requirement" (Pennycook, 1998, p.422). As a result, the paradigm shift to the inclusion of a multitude of varieties of English, viewed as legitimate and norm producing is unsurprising. For a complete understanding of English in this contemporary, pluralistic context, the history surrounding its emergence must be considered.

2.2.1 Colonialism and the Migration of English Language in Asia

The postmodern rise of English as a result of colonialism and trade has embedded English in numerous countries and domains. The rise of international migration has witnessed not only a movement of people but also their culture and language, as such the indigenous population of those countries needed to be familiar with English politics, imperialism, culture, and language (Phillipson, 1992). The unprecedented variety of endonormative forms of English has led to a "unique cultural pluralism, variety of speech fellowships, and linguistic diversity" (Kachru, 1990, p.5). In terms of the current research,

an examination of the introduction of English into Asia, which further propagated the resilience of English as a global language, is necessary. As illustrated in Kirkpatrick (2010), colonialism had resulted in the spread of English across continents, starting in America, Africa, and moving beyond to Asia, Singapore, Myanmar and Hong Kong. However, due to the different background of language family as Sino-Tibetan, Asian speakers linguistic elements differ greatly in many aspects from English where the basis is within the Proto-Indo-European family. To elucidate, Asian languages are mostly non-reflexive, non-alphabetic, tonal, and syllable-timed (Goddard, 2005). These features are disparate with those of the English language thus resulting in a dramatically different use, including the pronunciation of English. Nevertheless, the English language that locals learnt to use as a part of their lives was created around appropriateness based on their linguistic background, local lives and needs in terms of environment, social background, geography, norms and culture (Kirkpatrick, 2002).

The concern of this research is, however, of the countries in Asia that were never colonised by Britain such as Thailand, Japan, Korea, and China. The use of English in these countries resulted from the influence of globalisation and the representation of English as a beacon for modernity, civilisation, and development (Pennycook, 2014). In this context, English is viewed as an additional language that people use when communicating with those from a different mother tongue only. Given the assimilation of English into differing cultures and identities, English has become pluricentric with an ever-changing sociolinguistic reality which has resulted in numerous reconceptualisations of English, one of which is World Englishes (WE).

2.2.2 The Classification of English Communities

For a comprehensive view, WE refers to the concept that English is not owned by any specific group of people or even by the native speakers of English (Smith & Kachru, 2008). It is, in fact, viewed as the language of everyone using English in their lives. In this vein, there are arguments for a deconstruction of English, to allow for the promotion

and acceptance of the varying styles, varieties, accents and lexicon of Englishes around the world (Kachru & Nelson, 2006). The concept of WE resulted from an examination of Englishes globally in terms of pragmatics such as appropriateness, comprehensibility, and justification (Kachru, 1992). The examination led to the establishment of the International Association for World Englishes (IAWE), administrated by the University of Illinois, USA (Smith, 1981). It is assumed that there are approximately 75 territories using English either as a first language or second language, however, new varieties of English are constantly emerging. As illustrated in Kachru's (1985) concentric circles of English users, which is used as standard framework of WE studies, users of WE include the Inner Circle or norm providers such as England and the USA, the Outer Circle consists of the colonised countries such as Singapore and Sri Lanka, and the Expanding Circle or the other countries using English for the supplementary aim of communication such as Thailand and China. Following the conceptualisation of WE, aspects of global English usage have been reviewed and proposed as the terms continuously born as ENL, ESL, EFL, and EIL which are named according to the use of English within the speech communities as the criteria to classify the societies employing English. The synthesis of the definition of each English community as provided by the primary literature in WE can be viewed as follows. English as a Native Language (ENL) refers to the use of English by those who acquire it as their first language. The context of their use is bound up with the history, authority, and standard of the language. English as a Second Language (ESL) refers to those using English as their second language or so-called as L2 speakers. In this case, English serves country-internal functions and is considered the official or second language, relating directly to Kachru's (1985) Outer Circle. The differences between ENL and ESL according to the Kachruvian concentric circles model of English are that ENL is the Inner Circle which can be considered the genetic ENL, while ESL or the Outer Circle is the functional ENL where the users feel a strong identity in creating their own varieties of English and identify themselves as the native speakers of (their own varieties of) English

(Yano, 2001). Whereas English as a Foreign Language (EFL) is the use of English by non-native speakers for communicative purposes with native speakers, this was the predominant focus of language use and teaching in the first half of the 19th century and where linguistic competence was coveted. Due to the proliferation of English globally, through globalisation and traditional trade relations, the concept of English as a Lingua Franca (ELF) emerged. Within the ELF framework, English is considered in terms of its medium as a communicative language for speakers of differing L1's, where none possess English as their mother tongue, on the assumption that English is the most recognised language in the world.

There has been a shift in paradigm to a recognition of the importance of consideration of both English NSs and NNSs as the communicators of English, leading to the development of the concept of English as an International Language (EIL). When considered in terms of Kachru's (1985) concentric circles of English usage, it can be observed that when proposing said circles, he tentatively explained that his view of WE entailed the pluralism of English usage. In fact, his definition of WE users differs from the definition of EIL which aims to be more inclusive and conveys the idea of English as the global medium of communication and promotes the move towards an international standard for usage. In any case, the latter three concepts: EFL, ELF, and EIL, are similar in the respect that English is not the official or second language of the country and has no formal or critical roles for people to survive. Conversely, English is a tool for people in that country to live with and to communicate, such as in education and business. Platt, Weber, and Ho (1984) postulated that in countries where English is either ESL, EFL, EIL, or ELF, English can be referred to as *New English*. The New English concept is that of a structured English in which there is increased awareness of cross-cultural variation, negotiation and accommodations (Bhatia, 1997). To consider non-native varieties of English as either new dialects or an entirely new English is weighted more on pronunciation (Gorlach, 1999). The weighting results from phonology having higher

variability than syntax and morphology, each of which has been demonstrated as more stable across any context of English (Levis, 2005). The emergence of a new English results from the interaction of several factors. First, English is the language explicitly taught in school, where English is not the main language and native English is not the language spoken by the majority. Finally, the language becomes localised or nativised through the assimilation of some L1 features such as sound, the pattern of sentence, and words. As reported, for ESL and EFL, English language users approximate their English as close as possible to the native standard because NSs are considered norm providers and the main interlocutors for such context. On the contrary, within ELF and EIL, NSs are only a minor part of the community, they are not viewed as the owners of English and thus they cannot provide the standard for communication (Jenkins, 2000). Andreasson (1994) however argues that in the Expanding Circles, it is crucial that users imitate NSs because using language is not about cultural identity rather it is the exponent of one's academic and learning abilities. Nevertheless, as mentioned, it is possible that standard prescriptive grammar and lexis can be used in language teaching, but the issue of pronunciation is considered highly sensitive to L1 influence and heavily affected by articulatory muscle or motor habits (Cruttenden, 2014).

Consideration of the above factors in relation to the pedagogy of English language teaching begs the question of whether attainment of native-like speech is necessary. The past three decades reflect research which has critically examined theoretical and methodological frameworks based on monolingual ideology. This mainstream construct has exerted critical effects on linguistic unity, homogenisation, and centralisation of language use through the careful and conscious exclusion of language variation (Pennycook, 1994; Phillipson, 1992; Quirk, 1990). However, in the past two decades, the supremacy of English, interlanguage theory, and myth about native speakers as absolute experts has been questioned, challenged, and abrogated by a growing number of EIL authorities (Brown, 1993; Jenkins, 2000; Kachru, 1992; Kirkpatrick, 2010; Pakir, 2001;

Seidlholfer, 1999; Tollefson, 2000) advocating a move away from linguistic imperialism to the understanding and use of endonormative varieties of English. Current contention surrounding the mainstream ideology has propelled research to shift focus and investigate the benefits of being a non-native speaker, making a tremendous contribution to the field. The major literature has posed questions about the earlier constructs of the status and the roles of native speakers in learning and teaching English as a second, foreign, and international language and such questions can no longer be ignored.

2.2.3 Controversial Issues in World Englishes

Though the concept of WE and English communities appears straightforward and easy to understand, its practice is not so. The issues of WE and Standard English were originally debated by Quirk (1985, 1990) and Kachru (1985, 1991). Throughout the literature, there is a clear indication that the issues are grounded in the belief that standard or native varieties of English as American: GA, or British English: RP, should be the only varieties considered worth learning in many parts of the world, and equally, those considered the best to teach English are its native speakers (Quirk, 1985). On the other hand, Kachru (1985) claimed that such norms are not relevant to sociolinguistic reality, especially for those from the Outer and Expanding Circles. The controversies of WE have begged questions of English teaching and teacher education, intelligibility, attitudes, and identity. They are all raised and empirically and theoretically reported, of which the results are mixed and difficult to definitively pin down. The dominant monolingual ideology has led to a centralisation of English which promotes the English standard of native speaking countries as the exemplar: Linguistic Imperialism (Phillipson, 1992), and WE are only considered for use within a local context, among people with the same L1 and for general purposes only. This hegemonic, English as superior view, does not afford for the recognition of diversified forms of English and, rather, WE are viewed as inappropriate and rejected or even stigmatised. The notion of English native speakership has been widely used in WE applied linguistics and English language teaching (ELT), as such, L2

proficiency is measured against the ability of native speakers. However, the finite definition of this term, native speakers, seems to be unclear and the principle of lingua franca makes the term more challenging to define. In general, a native speaker refers to the monolingual speakers of their language. From the perspective of generative grammar, Chomsky (1965) further defines the concept by stating that native speakers of a language are those immersed in a monolingual speech community for all their lives, that control, maintain, and shape the direction of the language. Moreover, Crystal (2003) stated that native speakers have an intuitive knowledge of their language, which is something unattainable for non-native speakers when acquiring a second language. In ELT, there are recommendations for the learners to speak standard English rather than local endonormative varieties as there are already numerous varieties across the world (Quirk, 1990), even in the inner circle itself such as RP, BBC English, Queen's English and General American English all of which are acquired as the first language of native speakers. Conversely, WE authorities, Jenkins (2000) and Kirkpatrick (2010) vehemently argue that English and its non-native varieties should be promoted and encouraged if one wishes to be successful in the real setting of international communication, with Standard English viewed as just one dialect. Given the cross-cultural reality of English usage today, the appropriacy of the native speaker model is continuously questioned and there are growing numbers of alternative approaches which advocate the promotion of non-native varieties of English, such as the establishment of Lingua Franca Core (Jenkins, 2000), the Vienna-Oxford International Corpus of English (VOICE) (Seidlhofer, 2002), and English as a Lingua Franca in Asia (Kirkpatrick, 2008, 2010). Furthermore, there has been increasing exploration into attitudes and identities regarding the use of non-native varieties with suggestions provided on how to alter the status of non-native English to be less stigmatised (Buriphakdi, 2008) and question the deep-seated stereotypes of non-native speakers as life-long apprentices (Bolton, 2005), or failed native speakers (Cook, 1999). Among the various issues critiqued in WE as mentioned, linguistic prejudice towards an

accent is considered one of the most significant. Studies conducted by Giles and Powesland (1975, as cited in Kirkpatrick, 2007, p. 14-15) and Mahboob (2009) demonstrate that speaking with a certain accent can make people sound more intelligent than the others. Furthermore, Jenkins (2007, p. 162) also found that certain accents seem more correct, acceptable, pleasant, or familiar. Thus, the areas of interest within the mentioned issue relates to the promotion and recognition of all varieties and dialects of English as equivalent and appropriate in their given context. Moreover, discussion needs to be raised regarding the problematization of linguistic prejudice. Such views may be resulted from the linguistic focus on WE as it is different, rather than rethink its status as inclusive, that everyone using English can promote, participate and be the agent.

Miscommunication is another common problem found in WE. Due to the multitude of English varieties today, cross-cultural users carry their indigenous L1 linguistic features into their English production such as lexicon, grammar, and pronunciation. For example, Seidlhofer (2004) identified an EIL pragmatic problem as unilateral idiomaticity which occurs when one speaker uses a native speaker idiomatic expression such as an idiom, phrasal verb, or metaphor, which the interlocutor from a different L1 does not know. In the field of WE, the misunderstandings between English users are a consequence of the differences that exist between language varieties. In summary, the most salient problematic features of WE are the misunderstandings among English users in terms of pronunciation, interpretation, sentence pattern, and vocabulary between different L1 communicators. These issues lead to the concept of WE intelligibility which is discussed in detail later in this chapter.

2.3 The Critical Role of Pronunciation in English as an International Language

As mentioned throughout, the expansion of the English language by L2 speakers has been discussed by applied linguists from various theoretical perspectives in the past decades. It is evident that inter-dialect contact speeds up phonological change rather than

syntax and morphology (Jenkins, 2006). Consequently, pronunciation is claimed as the principle factor for intelligibility and difficulty has been demonstrated as increasing with the typological distance between interlocutors' first language. Among the differences in linguistic units such as lexis, grammar, and pronunciation of English speakers of different L1, Jenkins (2009) noted the differences in pronunciation as the most salient problem for mutual intelligibility of WE users. Gorlach (1999) further explains that syntax and morphology interpretation can be less disparate between English varieties, whereas pronunciation is the result of an individual's interpretation and articulatory habits. Similarly, Major (2001) indicated that L1 and L2 acquisition of morphology and syntax are more congruent due to the close correspondence between the target and production while the acquisition of pronunciation is more independent. As demonstrated, in L2 phonology, the possibilities of target similarities are more complicated. Although there is a connection between perception and production, as the target must be based on a reference and in production one will aim for pronunciation as the reference, the relationship is not predictable as both target and processes producing the output can differ for many reasons. Firstly, as stated in Major (1995), L2 speakers may or may not know the NSs target due to perceptual differences between NSs and NNSs; however, both possibilities can result in native and non-native like production as the phonological output is not directly linked to intention unlike syntax and morphology.

With the exception of the principles and theoretical function of pronunciation compared to the other linguistic units mentioned, moving to a more empirical stand, in Jenkins' (2000) interlanguage talk data, most subjects nominated pronunciation as the main or even the only cause of miscommunication. Narith (2009) also found that among NSs, pronunciation of foreign-accented English was a prominent feature that led to intelligibility failure over other linguistic elements. In line with EIL, there is consensus throughout the literature that pronunciation is the most sensitive issue to be explored. The advocates of the use of standard English as Queen's English, authorities such as Quirk, Trudgill,

Phillipson, and Hughes, although affirmatively propose that standard English can warrant all context of English usage especially in pedagogy, are yet very reluctant to claim that pronunciation of English can be firmly standardised. Unfortunately, in EIL, phonology is rarely mentioned and explored while it is incredibly significant on a worldwide scale. Empirical studies with high ecological validity, which examine communication in an authentic setting, are also lacking as they are time-consuming and require participants to have an adequate understanding of phonology, particularly with the study of suprasegmentals. Irrespective of the limitations in EIL phonological research, phonology requires in-depth study especially in the communicative context of English that is dominated by speakers from various L1's. Upon consideration, communication between NSs is undoubtedly different from that between NNSs in a multitude of ways, such as shared background knowledge, co-articulation, sound assimilation, and speed. The crucial point is when speakers are simultaneously having to process language at a number of different levels of lexis, grammars, and discourses, if they encounter processing difficulties, they tend to reserve their conscious efforts for the latter levels and in areas where their pronunciation is still variable allow it, through lack of focus, to return to more established habits. Thus, even when interlocutor intelligibility is salient, there may not be sufficient attention available for phonological convergence. Therefore, pronunciation should not be treated as though it is the last in the queue for conscious attention.

Pronunciation is often neglected for reading and writing, the skills which provide results in examination based cultures and viewed as a difficult area by both students and teachers alike. More than in any other area of ELT, there is an urgent need for an entirely new paradigm. Given the rise of English as a global medium of communication, pronunciation experts have stressed improved intelligibility as the primary goal of pronunciation teaching (Munro & Derwing, 1995a). As a result, under this paradigm, the relationship between foreign accent and speech intelligibility must be carefully examined. However, presently the tendency of EIL pronunciation still gears to the communication of

English as a foreign language where the focused recipients are NSs only, the ramifications of which are unrealistic pronunciation skills in the international use of English (Jenkins, 2000, p. 1). There is, hence, an urgent need for EIL theorists and practitioners to take EIL phonology seriously and to translate its implications into radical proposals for local pedagogy.

According to the definition, pronunciation is the way humans produce a certain sound or sounds (Richards & Schmidt, 2002) and encompasses the production of speech sounds including consonantal sounds, vowel sounds, prosody such as accent, stress, tone, intonation, etc. (Timyam, 2010). By nature, spoken language is considered the primary way of communicating. First spoken language or mother tongue is acquired automatically and naturally by all children who are brought up in the community (Stewart & Vaillette, 2001). However, it is the distinct way that languages organise their sounds that presents a problem, therefore, when English is not the mother tongue, English pronunciation is strongly shaped by the phonetics of the L1. In such non-native speaking countries, the linguistic basis that existed before the introduction of English is a key factor in shaping the accent that develops. According to Timyam (2010), though several sounds are shared among languages, these sounds do not function and distribute in two or more languages in the same way. For example, both Thai and English have the sounds nasal velar /ŋ/ and lateral alveolar /l/, but, in English nasal velar /ŋ/ is only found at the end of syllables while in Thai this sound occurs freely both at the initial and final position of the syllables. On the other hand, the lateral alveolar /l/ appears at the beginning and the end of many syllables in English, but in Thai, this sound is only found at the initial position of the syllable and never elsewhere. In short, the way the sounds are patterned is governed by phonological rules which are differed through languages. Hence, with the influence of L1, speakers of other languages tend to have difficulty in pronouncing sounds that do not exist in their own language, resulting in a foreign accent (Fromkin, Robert, & Nina, 2007). Studies conducted by Giles and Powesland (as cited in Kirkpatrick, 2007, p. 14-15) and

Mahboob (2009) link accented pronunciation to the feeling of the listeners, that speaking with a certain accent can make the speakers sound more intelligent than the others. An utterance, is therefore, an essential element of communication not only because it is the carrier of speech but also because it provides a wealth of biological, psychological and social information regarding the speaker: their age, sex, education, social and regional background. The listeners perceive, analyse, and evaluate these cues, and this can affect their attitudes towards the speaker (Pawlak & Szpyra-Kozlowska, 2010). In sum, a speakers' pronunciation is connected to how they are judged socially, regionally, and linguistically as well. The beliefs held regarding pronunciation and their influence on attitude formation further support the importance of pronunciation within an EIL context.

2.4 Justification of English as an International Language Intelligibility Definition

As previously discussed, English, as the language of the world today, is used and produced by speakers from various L1's, social contexts and regions. The main controversial issue regarding the existence of different varieties of English used globally relates to what level of intelligibility is considered acceptable (McKay & Bokhorst-Heng, 2008). Generally speaking, intelligibility is the level of recognition of the sounds and legitimate sound patterns of language (sound themselves and syllable shapes) that can, at the most basic level, be assessed by requesting written representations of what subjects think they are hearing. It is worth note that the construct of intelligibility and its measurement has various conceptualisations in research. Smith (1987) states that intelligibility is the degree to which one is able to recognise a word or utterance spoken by another. To elucidate, it is the level of understandable, comprehensible speech; capable of being understood only by intellectual means. Therefore, according to his definition, when considering intelligibility, it is also imperative to look at comprehensibility, the degree to which one is able to ascertain meaning from another's word or utterance, and interpretability, which is the extent one can perceive the intention behind another's word or

utterance. Alternatively, Smith and Kachru (2008) address the definition of intelligibility in the simplest way as the recognition of a sound as a word or another sentence-level element of an utterance. To demonstrate, if one were to hear "*Anyone lived in a pretty hometown.*" recognition of this utterance as composed of six words from the English language can be considered adequate to claim intelligibility. The listener may even be able to repeat it or say that it might be a part of the poem by having no idea what the utterance means. However, Jenkins (2000) defines intelligibility more specifically to the scope of EIL as the process of negotiation of meaning and places heavy emphasis on accommodation between interlocutors. Moreover, in communication, two exchanges are involved: social exchange and information exchange, for information exchange, a higher level of intelligibility is required. Also, Kirkpatrick (2007, 2010) views that English produced by non-native speakers tends to be more intelligible among those sharing a similar L1 than that produced by native speakers; implying a stronger effect of shared-L1 benefits on intelligibility over nativeness of the language. However, Trudgill (2003) argues that, in fact, there are several research papers which demonstrate that native speakers' Englishes have not been reported as more challenging for intelligibility than non-native Englishes. Such debates still permeate discussions surrounding EIL and are further elaborated in the later parts of the chapter.

The general definition of intelligibility raised above is the common view towards intelligibility. When talking about intelligibility, people often think about the concept of understanding a language. However, drawing the intelligibility definition from a linguistically professional view, it can be analysed more sophisticatedly and accurately as follows. Intelligibility can, in fact, be considered interrelated to comprehensibility and interpretability. However, these three terms are different and are not interchangeable (Smith & Nelson, 2009, p. 430). To fully understand the conveyed proposition once uttered, one needs to possess all three - intelligibility, comprehensibility, and interpretability. Therefore, there must be an interpretation of the utterance's pragmatic

function and its speech acts or illocutionary force which is what is said when it is not being said (interpretability), the utterance's semantics or meaning of each word (locutionary force), and the utterance's phonology or the recognition of the sounds of the signalling language (intelligibility). One of the classic examples here is the case of a Western female and a male taxi driver in Istanbul. The female passenger asked the taxi driver to "*Turn off the interior light*" to which the driver ignored her repeated requests and resulted in both parties ending the taxi trip furious. In this case, intelligibility and comprehensibility were achieved as the taxi driver clearly heard and recognised every sound string in the phrase, turn off the interior light, uttered by the female. Additionally, he understood the meaning of the action, turn off the interior light. However, it is against the law in Istanbul to turn off a light in the private space comprising a female and male. The taxi driver failed to comprehend the intention of the female passenger while at the same time, the female passenger failed to interpret the reason behind her multiple requests being ignored by the driver. This is the classic case of communication breakdown raised to distinguish the three element of intelligibility by Smith and Nelson (2009).

As demonstrated, intelligibility *per se* is dealing with the recognition of sounds regardless of their semantic and pragmatic function, but the term intelligibility has been over-used and over simplistically justified in the context of understanding the message rather than focusing on the sound as perceived. For intelligibility to be claimed, a recognition of the speech as the targeted language is all that is required, understanding the meaning is a negligible factor (Brown, 1999). However, the oversimplification of intelligibility as comprehensibility or understanding has been highlighted as a pervading issue within research. To explicate, Win (1998), Kirkpatrick, Deterding, and Wong (2008), and Pongpairat (2011) all used questionnaire ratings in their research which required participants to rate the level of perceived intelligibility. However, argued by this research, closer inspection of the methodology of those works demonstrated that participants were in fact rating comprehensibility or understanding rather than intelligibility. The researchers

bound the understanding of the pronunciation to the meaning rather than investigating how the sounds pronounced were close or far from targeted. In the works noted and many others in the field, such ratings are misleading as participants should not be required to understand the meaning of the utterance to claim that the speech is intelligible. In fact, intelligibility would be more suitably defined as phonological intelligibility that is whether the pronounced speech is perceived by the listeners as intended by the speaker in terms of its phonology only. As a result, research has conceptualised intelligibility as *actual intelligibility* and *perceived intelligibility* such as Munro and Derwing (1995a), Derwing and Munro (1997), Matsuda *et al*. (1999), and Lu (2007). Two intelligible speeches can be rated for comprehension differently depending on the difficulty in processing it. For the research noted, when the researchers wanted to measure the level of phonological intelligibility, the term actual intelligibility was used which required the use of objective tests such as dictation and cloze tests. However for examination of the subjective experience of participants in relation to intelligibility of the speech, the term perceived intelligibility was used and relied on the use of subjective tests such as discussion, interview, and questionnaire ratings. Nevertheless, it should be noted that though these works used multiple definitions of intelligibility, clearly defined instructions during the data collection process were imperative to ensure that it was the string of sounds in the speech that were measured, and not the meaning, otherwise the construct validity of the test would be lost and there would be a high chance that comprehensibility or interpretability was being measured.

To accurately measure intelligibility, regardless of the conceptualisation employed, it is essential that the tool of measurement be certain enough to reflect the aspect of intelligibility to be tested. For example, the transcription task solely focuses on how the pronunciation is recognised regardless of whether participants understand the meaning of the targeted speech. Paraphrasing, commonly utilised in comprehensibility studies, requires comprehension of the message for both pronunciation and meaning.

Story-retelling requires higher linguistic proficiency beyond phonology and semantics and additionally speech acts, and communicative maxims must also be considered. Story-retelling is commonly used in interpretability studies. For the purposes of the present research phonological intelligibility was measured as the research aimed to explore the common phonological features that impeded intelligibility to ascertain which should be included in a Thai EIL pronunciation core. Towards this end, Smith and Kachru (2008) conclude that it is possible to have intelligibility without comprehensibility and it is feasible to measure the difference between them: one's intelligibility of a statement can be high even if one cannot attach meaning to the utterance.

2.5 Lingua Franca Core

The proliferation of English has resulted in a surge of interest pertaining to language standards and the resulting discourse surrounding a re-examination of traditional codification and standardisation (Kachru, 1985). EIL scholars such as Jenkins (2000, 2006), Seidlhofer (2002, 2004), and Kirkpatrick (2010) have made significant contributions to the issue of intelligibility threats in EIL with their valuable articles and books such as Seidlhofer's (2002) corpus the Vienna-Oxford International Corpus of English (VOICE), Kirkpatrick's (2010) English as a Lingua Franca in Asia, and notably Jenkins' (2000) "The phonology of English as an International language". Through their analyses of English users from a variety of different backgrounds a comprehensive body of work has been established. While Seidlhofer focused on lexicogrammar, Kirkpatrick investigated all linguistic features as pragmatics, syntax, and phonology in non-standard English among Asian speakers. Jenkins however, was solely concerned with pronunciation and the identification of features that led to intelligibility failure. Her proposed Lingua Franca Core (LFC) and all relevant issues are described as follows.

2.5.1 The Introduction of Lingua Franca Core

In 2000, Jennifer Jenkins proposed the Lingua Franca Core in her book "The Phonology of English as an International Language". She purported that the Lingua

Franca Core; henceforth LFC, aims to explore the phonology of English from an international perspective. That is how EIL users behave phonologically which helps in facilitating the use of EIL (p.2). According to the LFC, linguistic variation has long been a concern for language teachers, but the norms have rarely been questioned. The LFC was an attempt to improve communication in international contexts through the identification of key areas of information exchange in relation to pronunciation. The core aimed to specify the features of English pronunciation that are integral to intelligibility in international contexts to facilitate effective communication while allowing speakers to retain their endonormative varieties of English. Given this facet of the LFC, the targeting of specific pronunciation features to form the core was considered advantageous in EIL teaching as it reduced the unnecessary burden on learners to achieve native-like speech providing intelligibility was not compromised. In a nutshell, EIL academics described the cores as an alternative model comprising the basic elements of English pronunciation as the minimum standard to preserve intelligibility, while allowing speakers to retain their L1 accent. Nevertheless, immediately after the core was proposed, it was widely criticised and viewed as highly controversial.

2.5.2 The Establishment of Core and Non-Core Features

With regard to research methodology, in her LFC work, Jenkins collected data from speakers with different L1's through a data source, which she coined interlanguage talk (ILT). The data was collected over several years through various means such as observation, focusing on miscommunication and communication breakdown, recording different L1 pairs/groups of students engaging in communication tasks such as information gap activities, and investigating production and reception of nucleus stress of the various L1 users. Jenkins relied on data from the observation of authentic communication among interlocutors, in an authentic communication setting, as opposed to employing an experimental method and the use of objective tests. This was resulted from a desire to avoid laboratory-based research due to the lack of ecological validity and an inability to

generalise to real-life communication contexts (Jenkins, 2007: p. 85). From her study, Jenkins determined the non-native phonological features that were found to impede intelligibility and thus should be given more focus in EIL teaching and learning. However, throughout her book, she consistently emphasises that in fact what is not shared is as important as what is shared. Therefore, the phonological features raised here highlight those indicated as threats and those demonstrated as non-threats to intelligibility, as shown in Table 2.1.

Table 2.1

Phonological Features in LFC

Non-Standard Items Found	Intelligibility Threat	
	Yes	No
Consonant		
The substitution of /θ/ and /ð/ with /t/ or /d/ or /s/ or /z/		No
The use of /f/ and /v/		No
The use of /l/ and /ɫ/		No
The use of rhotic /r/		No
Close approximations to core consonant as /v/ as /b/		No
Aspiration following fortis plosives	Yes	
Fortis/lennis differential effect on preceding vowel length	Yes	
Initial, medial and final cluster simplification	Yes	
Vowels		
Vowel length (quantity)	Yes	

2.5.2.1 Non-core features. The recommendation for the omission of non-standard sound features in the LFC is grounded on the basis that they frequently occur across L1 features and are not indicated as an intelligibility threat. These features are referred to as non-core features, and a brief account is given as follows. The substitution of /θ/ and /ð/ with /t/ or /d/ or /s/ or /z/, the use of /f/ and /v/, the use of /l/ and /ɫ/ and the use of rhotic /r/, do not impede intelligibility. The famous issue of English dental fricative sounds /θ/ and /ð/ found in many accented Englishes, these two sounds (as in thin and this) are pronounced variously. From the interlanguage talk data, for Indian speakers, they are pronounced as /t/ and /d/ (tin and dis). On the contrary, speakers from Sri Lanka, Malaysia, Singapore, and Africa use them as /tθ/, and /dð/ (t-thin, d-this). Furthermore, there are features excluded from the core because they are considered a matter of choice or variants between GA and RP. In the case of /r/, Jenkins follows GA where the variant of

this sound is retroflex approximant [ɻ] instead of following RP where the variant of this sound is post-alveolar approximant [ɹ] because it does not feature in RP such as four and four books except when it is followed by a vowel four eggs. Also, there is only one version of this sound to be acquired in GA. However, for the sound /t/, Jenkins utilised RP because it is pronounced the same in all environments. Lack of distinction between /r/ and /l/ is also mentioned. For speakers from Hong Kong, Singapore and East Africa, red and led are interchangeable. This is in contrast to GA where /t/ can be pronounced as voiced flap /ɾ/ such as in matter. It is worthy of note that when there are non-standard features found, Jenkins relied on the variant of the standard version of pronunciation in which the sounds were simpler and easier to produce. Some consonants may not be pronounced exactly the same as RP or GA but considered closer to another phoneme in English, these sounds were also excluded from the LFC such as the way Spanish people pronounce /v/ as /b/, and /h/ as /f/ for Japanese speakers.

     2.5.2.2 Core features. Conversely, the non-standard features found in the interlanguage talk data which resulted in a decrement to intelligibility, otherwise known as core features, were included in the lingua franca core. For aspiration following fortis plosives /p/, /t/, /k/, when occurring at the initial position of the stressed syllable, without the puff of air in these sounds, the listeners cannot find it voiceless but tend to identify it as voiced /b/ for /p/, /d/ for /t/, and /g/ for /k/. When voiceless /p/, /t/, and /k/ are at the initial position of the words, they are pronounced without aspiration (pin as bin, tin as din, cap as gap) by speakers from India, the Philippines and Malaysia. The distinction between fortis and lenis sounds relates to the length of vowels preceding it such as sit and see. To summarise, for NNSs, according to Sharf's (1964) explaination of vowel duration in normal speech, it is more difficult to shorten the vowels before fortis, contrarily to shorten the vowels before lenis is far easier as it requires less muscular energy. Hence, intelligibility failure is a result of errors in fortis and lenis pronunciation after different

vowel lengths such as sit and see, and seed, and seat. Therefore, there must be a pedagogic intervention for the learners regarding shortening vowel sounds before fortis consonants.

A significant feature of pronunciation that impedes intelligibility relates to the simplification of consonant clusters, in particular, consonant *deletion* (as opposed to addition). Furthermore, the mispronunciation of consonant clusters at the initial position of the syllable is found more problematic than the final position. Cunningham (2010a) noted that consonant articulation, as the case of [θ] and [ð], may leave NNSs with a particular set of consonants which only partly resembles that of any native speakers regardless of variety. The precise articulation of consonants is a major factor in the identification of NNS accents resulting from L1 influence and the typological rareness of certain consonants articulation. This feature, therefore, cannot be disregarded when considering the development of a model for learners. Even if NNSs do not aspire to the target of a standard native variety, they have presumably had a native variety (GA or RP) as a model for their pronunciation production throughout their formal language education. A further consideration within the issue of consonant articulation relates to place and manner of articulation as well as phonotactics, recognised as sub-areas to be explored regarding non-standard features (Rajadurai, 2016). Place of articulation is another variable that is not constant for all NNSs, but the standard models do have (Young, 1988) e.g. alveolar stops where other languages have dental stops. The manner of articulation can also cause difficulty for some NNSs especially in the case of affricates of English. The exact degree of tongue grooving and the place of maximum construction for /s/, the lip rounding and level of frication of /ʃ/ can literally be shibboleths. As for phonotactics, they are often identified as the most problematic area for non-native speakers. English is an unusually permissive language in this respect. Speakers of other languages do not easily free themselves of the phonetic constraints of their L1 and together with the influence of L1 phonological rules, it is difficult for speakers to consciously access and even more, to suppress these when speaking English (Fishman, 2004). The phonotactic difficulties of

NNSs are, in many cases, a very prominent feature of accent. Overall, NNSs are more variable in their pronunciation than NSs. In speech recognition, there appears to be an assumption that variability is an expression of uncertainty and lack of familiarity with the target language articulations which can be an indicator for NSs to identify NNS features.

Awareness when pronouncing certain English sounds should also be taken into consideration in respect to sound variability as well. For example, the pronunciation of voiced sounds such as /z/ and /ð/, which can be pronounced as their voiceless counterparts /s/ and /θ/ by native speakers of English themselves during spontaneous speech. The careful pronunciation utilised by speakers during tasks such as reading a word list is in direct contrast to the pronunciation of spontaneous speech (Cunningham, 2010b, p. 4). This premise supports the assertion of the LFC of Jenkins (2000) regarding the exclusion of voiced as voiceless as it is considered a variation across L1 and is not regarded as a threat to intelligibility. However, it is always possible to argue that the quality of intelligibility of each non-standard sound is indeed varied through the interlocutors. Voicing may not appear to be a threat to intelligibility within the LFC, but it is not impossible that it can be an intelligibility threat if the subjects were different. While consonant articulation is a salient identifier of NNS pronunciation, the impact on intelligibility is viewed as less critical than vowel quality as shown in several studies (Field, 2005; Flege *et al*., 1997; Liu, Tsao & Khul, 2005).

Regarding vowels, vowel quality is considered stable across L1 varieties. Hence they have a greater effect on international intelligibility. Therefore, pronunciation regarding vowel length requires more focus in the LFC. It has been argued however that vowel quantity is greatly differed between L1 varieties and as such does not impede intelligibility and therefore should not be a focus in the LFC. As a result, the only feature regarding vowels worth including in the LFC is vowel quality. Differences in vowel quality are found in accordance with Cunningham (2010a) and are considered implicit in distinguishing one variety of English from another whereas vowel quantity is considered

less useful for listeners to distinguish varieties in real time. This is the area where NNSs and NSs may differ due to a lack of corresponding structures. Additional vowel features identified but not considered a threat to intelligibility are noted as follows: the inability to distinguish between short and long vowel length as demonstrated by speakers from Singapore, Hong Kong, India, and Africa and the lack of distinction between short and long vowels such as /ɪ/ and /iː/, so seat and sit tended to be pronounced with /ɪ/. The same phenomenon is also demonstrated with /ʊ/ and /uː/. Additionally, there were many discrepancies found with the length of /aː/, for example, speakers from Sri Lanka, Singapore, India, the Philippines, and Jamaica pronounce /aː/ without the length, so staff is pronounced as stuff and African English always pronounced schwa /ə/ as the full vowel /a/ at the end of words, so matter is pronounced as matta. Diphthongs are pronounced shorter as monophthongs in the English of Indian, Lankan, Malaysian, and African, schwa /ə/ as the full vowel, for example, /eɪ/ in take becomes /e/ as tek, and /oʊ/ in coat becomes /ɔ/ as cot. Of note, there are only three closing diphthongs found stable across L1 varieties and thus require focus in the LFC. The remaining diphthongs differ widely in quality among NSs therefore cannot be accorded high priority in EIL teaching (Jenner, 1995; Jenkins, 2000). Nevertheless, the pronunciation of vowels is perceived as more sensitive and less rule-governed than consonants in L2 speech production. Sobkowiak states that the substitution of vowels in L2 speech appears to depend on personal preference rather than any phonetic regularity (as cited in Gonet, Szpyra-Kozlowska, & Swiecinski, 2010b).

Concluded from LFC, Jenkins proposes that the universal sound problem is consonant simplification, especially in clusters. Regarding this issue, it is explained that cluster simplification can be found in two forms – deletion and addition; for example, schwa paragoge, depending on the first language of the speaker (p.142). When considering deletion, the pronunciation of product as [pɒdʌk] is demonstrated as posing more problems for intelligibility over insertion, for example, the pronunciation of stroke as [sɪtrəʊk]. She explains that the addition serves to clarify consonants and thus increases intelligibility.

Gonet, Szpyra-Kozlowska, and Swiecinski (2010a) further suggest that the articulation of schwa, and the process of vowel reduction play a crucial role in English pronunciation for many foreign learners. The process of vowel reduction can be, in fact, defined in several ways. Trask states vowel reduction is any phonological process in connected speech which makes a vowel shorter, less loud, lower in pitch, or more central in quality or which neutralises some vowel contrasts in unstressed syllables (1996, as cited in Gonet et al., 2010a). Pennington indicates that the tendency to weaken vowels towards schwa in conversational English results in difficulty for most NNSs (1996, as cited in Gonet et al., 2010a). Thai learners constitute no exception to this observation and their problems in this area are generally recognised. The source of this difficulty is perceptible. First of all, many languages including Thai fail to modify the quality of vowels in unstressed syllables and thus have no counterpart for English vowel reduction; additionally English orthography has no clearly defined way of representing schwa. This notion is further stressed to the point that the pronunciation of schwa seems undeniable for proficient English due to its high frequency in English sound counts, both those conducted over the lexical inventory of the language and those of running speech. Collin and Mees also support that any mispronunciation of schwa is bound to be attributed to a very noticeable level of heavy foreign accent (2006, as cited in Gonet et al., 2010a). As such, the accurate pronunciation of schwa is perceived as attaining native-like speech. The lack of vowel reduction from NNSs of English is an overarching issue in Thai L2 speech production and results in unstressed syllables having undue prominence. Jenkins (2000) echoes this claim and purports that vowel reduction must be given an important and early place in any teaching programme.

Jenkins (2000) discovered further interesting phonological phenomena such as word cognate or oversimplification, the pronunciation of balconies as balcon and the sporadic loss of voice on certain word-final consonant sounds. To elaborate, instead of pronouncing voiced sound at final consonant in feed, give, and rob, Indian, West African,

and Papua New Guinean speakers will make it voiceless as feet, gife, and rop. This is often exhibited in the form of unreleased final consonant or replacement with a glottal stop as demonstrated in Ghanaian, West Indian, and Singaporean English, where cat becomes ca (t). However, this is also displayed in some non-standard varieties of British English such as Estuary English and Cockney.

2.5.3 Issues and Criticism on LFC

    2.5.3.1 The exclusion of prosodic features. Standard English authorities view the core as a simplified version of English pronunciation for NNSs. One of the major criticisms was in respect to Jenkins exclusion of all prosodic features from the core in favour of an emphasis on segmental features. This factor has drawn wide criticism from researchers in the field who argue that the communicability of English rests more with its rhythm and intonation than the articulation of sounds. In other words, there is a belief that segmentals have less of a detrimental impact on intelligibility than suprasegmentals including stress, rhythm, intonation and features of connected speech (Anderson-Hsieh, Johnson, & Koehler, 1992; Johansson, 1987; Munro & Derwing, 1995b). Szczepek Reed (2010a) also pointed out that prosody is considered an integral part of human conversation. Even Jenkins (2000) in her LFC, the importance of prosody: nuclear stress, is stated that it is important for accuracy. However, LFC authorities in general; for instance, Fayer and Krasinski (1987), Koster and Koet (1993), Jenkins (2000, 2007), and Walker (2010) argue that segmentals are more serious than prosodic features and many aspects of prosody are unteachable such as stress pattern and intonation, which are heavily varied through individual circumstances. Moreover, to master the use of prosodic features, the learners require exposure to communication in an authentic setting, an English-speaking country, for a considerable length of time, over training in the classroom. Regarding this, it is agreed (Anderson-Hsieh, 1995; Brazil, 1994; Weltens, de Bot, and van Els, 1987) that when pronunciation intelligibility failure occurs the problem does not solely arise from prosodic error but happens in combination with segmentals. The incongruence in opinion

regarding segmentals and suprasegmentals is further highlighted in the disparate views of Brown (1991) and Jenkins (2000). Brown (1991) postulates that if suprasegmentals are indeed more basic and important than segmentals, they should be a prominent feature of all English instruction textbooks instead of segmentals. However, according to Jenkins (2000), those favouring suprasegmentals focus on communication between NSs and NNSs rather than between NNSs themselves. This fact is reflected in the work of Pongpairat (2011) who considered tonality and intonation (suprasegmentals) as crucial for intelligibility. However, a critical examination of her research highlighted that the intelligibility judges, as expected, were ten native speakers of English. Hahn (2004) examined the impact of non-native primary stress patterns on NS listeners, and the results supported such claim of suprasegmentals' importance. It was demonstrated that the accurate position of primary stress was important in determining intelligibility among native American English listeners. The research revealed that when the message receivers are NSs, suprasegmentals are an undeniably salient feature in intelligibility. However, when conducting empirical research, the data collection process concerning suprasegmental features is limited by various methodological issues; for instance, it requires the participants to have greater phonetic knowledge than when investigating segmental data. Moreover, the task and methods are more time consuming, and the data is more sensitive to analyse as illustrated by Derwing, Munro, and Wiebe (1997), that judging prosody was more sensitive than segmentals and required a more detailed procedure. Hence, it can be concluded that suprasegmentals may be more important when a) the learners are in a context that NSs are the intended interlocutors, b) the learners will be living in an English-speaking country for a prolonged period, and c) the learners are encountering some professionals where a native-like accent is preferred. The present research proposes that to determine the prominence of segmentals and suprasegmentals on intelligibility depends entirely on the purposes and the questions of the research, the extent the core is aimed to be established for and who is the main focus in using and providing

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the data for the core. In addition, this research suggests that it is not necessary for the core to be completed in one single piece of work that inclines toward segmentals or suprasegmentals. In fact, two separate cores for segmentals and suprasegmentals should be welcomed to the field and the selection, adoption and implication should be open for the specific context of the language user.

Regardless of the controversies, weakness, and limitations of the LFC, its principles are rational, relevant and useful for EIL communication and pedagogy as the drive is to focus on the comprehensibility needs of NNSs rather than focusing solely on NSs. It is founded on the goal of establishing a core that focuses on the reality of the uses and users of English in an international communicative context by selecting pronunciation priorities to aid intelligibility. The LFC recognises the multilinguistic use of English, borne from an acceptance and integration of the varying sociolinguistic and communicative rules. The Thai EIL pronunciation core in this study was established from the same rationale as the LFC; to identify and define those phonological and phonetic features that are crucial in safeguarding mutual intelligibility within an EIL context. As multilingualism is a defining feature of English use in the contemporary context, the development of more pronunciation cores will highlight the irrelevance of the monolithic model of English and bolster the new pluralistic paradigm, whilst providing a more effective means by which to address pronunciation issues and reduce the cognitive load of learners by negating the requirement of imitating native-like speech. While theoretically underpinning the present study, the analytical methods and detailed procedures employed were considerably different from the LFC, especially with regard to suprasegmental exclusion as in this study, it is proposed that suprasegmentals do play a vital role in intelligibility failure. However, the aim of collecting intelligibility data from authentic connected speech of English users, who lack expertise in phonetic knowledge rather than trained phoneticians who are the unreal interlocutors in EIL, limited the possibility of

eliciting intelligibility data concerning prosodic features. Consequently, only segmental features were the focus of this study.

In the LFC, Jenkins (2000) provides a clear summary of the common segmental features of the pronunciation of English speakers from different L1's with particular emphasis on those from the Expanding Circles. The low efficiency of NNSs drive them to use English below the level of awareness, and these features are likely to be transferred to utterances in English such as the use of the wrong /l/ and /r/, word stress, and intonation pattern. Jenkins (2000) then compared the discrepant pronunciation of unintelligible sounds to that of native speakers of English (GA and RP). From the WE perspective, standard English or native varieties of English should not be used as the model in EIL pronunciation. However, it is undeniable that for teaching purposes, a model or guideline is required to inform teaching content. Dalton and Seidlholfer (1994) provided clear insights regarding this dichotomy. They stated that *norm* is correctness while *model* is the point of reference for guidance. Thus, in teaching EIL, the promotion of English as a heterogeneous language is adopted and a model which is more appropriate to the specific use of language implemented, a shift in paradigm from the earlier focus on the importance of achieving native-like proficiency. The implemented model should help to guide pronunciation which retains L1 features while preventing learners from diverging too far from a common pronunciation core to safeguard intelligibility. Additionally, in the establishment of a pronunciation core, there are two main approaches suggested. First, is the identification of the core as the common features found across varieties (extraction), second, is the specification of the core as the threat for intelligibility (construction) (Jenkins, 2000, p. 125). This study, in line with the LFC, followed the latter, in which the problematic features found were used to establish the core. The appropriate model of pronunciation teaching can help to ease teaching frustration and help learners to become more comprehensible to their interlocutors.

2.5.3.2 ASEAN English phonological core. As previously discussed, the establishment of the LFC collected data from the major English accents of the Expanding circles such as Japanese, Korean and Brazilian but excluded the majority of accents from the periphery area as South East Asian (SEA) which incorporates Thailand. An examination of research led to the work of Kirkpatrick (2010) who collected phonological data of English features as spoken by SEA countries and investigated the overarching features which resulted in a threat to international intelligibility. The work presents the common features of English pronunciation spoken by expanding circle speakers - ASEAN speakers (ASEAN – Association of South-East Asian Nations declared in 1967 including Indonesia, Malaysia, the Philippines, Singapore, Thailand, Brunei, Vietnam, Laos, Myanmar, and Cambodia). The data was collected from the speech of representatives from ASEAN members attending the South East Asian Ministers of Education Organisation Conference held in Bangkok in 2008. The speech of the English NNS delegates of the conference was recorded, analysed, and described for the shared linguistic features of English in this region. The results of the research indicated that the most common phonological features of SEA accented English affecting intelligibility were: the reduction of consonant clusters; 'first' as 'firs', incorrect pronunciation of dental fricatives; /θ/ as /t/, the merging of long and short vowel sounds; /iː/ and /I/ as /I/, the reduction of initial aspiration; teach as /diːʃ/, the lack of reduced vowels; officially and vegetable; heavy stressed pronouns: HE has been in Singapore. and heavy end-stress; the incidental WAY. Kirkpatrick (2010) contends that these collective features of SEA pronunciation of English can be produced by an inherent physiological difficulty; for example, *th* which is demonstrated as a universal difficulty in pronunciation, or by influence from the speaker's first language; to elucidate, the lack of reduced vowels resulting from the syllable-timed basis of Asian languages which is opposite to the stress-timed patterns of British and American English. These shared features of English found in ASEAN speakers, though they are different from the norm of standard or native English, have been established as

increasing the level of intelligibility among ASEAN speakers themselves. This is not surprisingly supported by the benefits of shared L1 accent familiarity.

From Jenkins (2000) and Kirkpatrick (2010), the non-standard features identified and noted as threats to intelligibility were different. However, there was consensus on one feature which was cluster simplification. This supports the view of Cunningham (2010a), that the non-standard features of NNSs speech which distinguish it from NSs are often difficult to determine. With L1 *per se*, phonetic differences between the accents represented are still very great. Succinctly, Kirkpatrick (2010) points out that the differences in the pronunciation of each variety of English were mainly influenced by the L1 of the speakers resulting from the assimilation of indigenous L1 features into their L2 speech production. As supported by Jenkins (2000), it is considered the responsibility of local English educators to explore features that threaten their own L1 accented English and apply these in EIL pronunciation teaching to garner the best results for international intelligibility in that context.

2.5.3.3 The exclusion of English native speakers. Demonstrated in both Jenkins' (2000) LFC and Kirkpatrick's (2010) exploration of ASEAN phonology, the cores gear toward the use of English as a lingua franca, either in the Expanding Circle or scoping down to the ASEAN community, where the context of English usage is communication with people from different L1's whose mother tongue is not English. Though stating at the very beginning of her book that the LFC was established to ease EIL communication, in EIL communication English NSs are included which is converse to English as a Lingua Franca in which all communicators have English as their L2. Upon consideration of this information it can be argued that the concept of the LFC is therefore for ELF users rather than EIL users. Holliday (2005) as implied by Van Den Doel (2007) contends that the LFC sets out to ignore the concerns of native speakers of English by concentrating on NNSs interaction only and disregards the importance of interaction with NSs. There is an undercurrent of suspicion regarding the development of both ELF and the LFC, as the most

famous proponents challenging the view of native-like speech for NNSs are in fact NSs. It has been suggested that their development was an ill-disguised attempt on the part of English-speaking Western educationists to control the type of English people should use in international contexts which would not reduce the inequity between different speakers of English. Speech perception research (Trudgill, 2005) highlights that in real world English communication both NSs and NNSs are communicators, however, differences arise in relation to their L2 speech perception and processing skill. NSs find it easier than NNSs to understand other speakers of English especially when it comes to NNS speech containing far less crucial phonetic and phonological information. NSs (like Jenkins and Kirkpatrick) are better able to use contextual information (top-down process) whereas NNSs (like the supporters of their works) find it more difficult to process another speaker merging minimal pairs. Arguably, though native speakers of English are considered the minority group of English users according to the WE concept and the concentric circles of English users, and there are active attempts to claim for the authority and legitimacy of the use of non-native Englishes around the world, the interaction with English NSs should not be completely ignored and neglected in the new paradigm of this post-colonialism era (Crystal, 2001). The erroneous assumption that NNSs use English as a medium to communicate with NSs must be challenge and a recognition of its intranational use acknowledged. Whilst contemporary communication takes place across a broader spectrum, English NSs' perception of the production of non-native English speech and the features that threaten their intelligibility cannot be ignored if one truly wishes to be successful in international communication. In order to critically examine the diversity of WE, research must be conducted through an interdisciplinary lens and orientate towards a theoretically integrative approach (Kachru, 1997). As such, the most practical phonological core for international usage of English must include communication data from all groups of English users as illustrated in the concentric circles of Kachru (1985): English NSs and NNSs from both the Expanding and Outer Circles.

2.5.3.4 Teaching pronunciation with LFC. The WE concept promotes the recognition and integration of different endonormative varieties of English. It includes the consideration of social and culture backgrounds and their impact on teachers and learners, and thus should be a focus when providing teacher training and education (Franson & Holliday, 2009). In Thailand, traditional grammar-based teaching is no longer considered an effective way to enhance students' abilities in dealing with the English language, especially for communicative purposes. Therefore, the trend of English teaching now focuses on worldwide communicative skills. The most important issue to be considered in EIL learning and teaching is hybridisation (Pennycook, 2006). The term reflects the assimilation and institutionalisation of English that has resulted in a diversity of varieties. As such, a critical review of native speaker ideologies is required. A central issue in Thailand relates to Thai English teachers who are reluctant to teach pronunciation and, hence, adhere to the safest method using RP and GA guidelines. Munro and Derwing (1995a) indicate that pronunciation teachers are left without much guidance as to "what to teach" (p. 305). Also, Low (2015) states that in EIL, there is a dearth of research regarding pronunciation teaching; only the work of Jenkins (2000) and Walker (2010) proactively studied towards this purpose. Research in this area should take more action in helping to set learning goals, identify appropriate pedagogical priorities for the classroom and determine the most effective approaches for teaching. Research focusing on speech production and perception, whilst gaining attention, are rarely cited or interpreted in teacher-oriented publications. The vast majority of teachers have limited knowledge of phonetics and linguistics and it is currently indicated that phonetic research is almost completely divorced from modern language teaching and is rarely reflected in teaching materials. Any pronunciation core proposed, therefore, should be within a framework where mutual intelligibility is the primary consideration in order to identify ways to tailor it to the students' needs.

The role of English as an international language is gaining a more dominant status in ASEAN communities, especially with the integration of ASEAN Economic Community (AEC) in 2015. Nevertheless, no country in ASEAN has English as their mother tongue. In addition, the level of English proficiency is vastly different. For example, in the colonised countries such as Singapore, Malaysia, the Philippines, and Brunei, English has been set and firmly acquired. While those that have never been colonised by Britain such as Laos, Vietnam, and Thailand, English is limited to an elite group of people in society. Furthermore, the limited and poor use of English has resulted from the lack of opportunity for residents of Thailand to hear English spoken by other Thai speakers. EIL is geared towards the use of English in an international context where there are both native and non-native speakers. Therefore, teaching EIL must aim to ensure reciprocal intelligibility among speakers of different English varieties and proficiency (McKay, 2002). Jenkins (2002) also states that there is an urgent need for empirically established phonological norms and classroom pronunciation models of EIL. As such, she proposed the LFC in 2000. EIL authorities have provided invaluable guidelines for teaching English as an international language. Kirkpatrick (2007) emphasised that the selection of varieties to be taught must be determined in the context of the learners. From this perspective, he reviews the advantages and disadvantages of adopting an exonormative or an endonormative model for teaching purposes. Exonormative varieties are those originating from the inner circle of English users such as the UK, USA, and Australasia and endonormative varieties are those based on local, nativised versions of English. He argues for a context-sensitive approach to the issue, for instance, Indonesia might be well advised to adopt a Malaysian variety as a model, whereas for China, with a different socio-linguistic context, an exonormative model may be better with the allowance for nativised features. He asserts that to teach EIL effectively, it is more appropriate to focus on the process of cross-cultural comprehensibility between learners as the communicative goal rather than notions of accuracy and standards of language. The implications for teaching relate to the adoption of

a flexible process approach rather than a codified product approach. However, the prominent difficulty is that teachers of English lack the knowledge of English as relevant to the culture. Hence, it is an urgent issue which methodologists and material writers must respond.

To move from the general teaching aspects of English in the EIL context, specifically to pronunciation teaching, Jenkins (2000) offers interesting thoughts. Jenkins (2000) emphasises that to date, there is still no principled discussion of the selection of internationally appropriate pronunciation modes and native-like accent is generally considered a utopian and unrealistic goal. Educators in the field should consider how to make phonological descriptions more realistic to help learners acquire pronunciation that will facilitate intelligibility in international communication. There is a need to identify phonology for international use of English, the role of pronunciation in intelligibility in EIL interactions, and the phonological features central to such intelligibility. The exploration of a wide range of NNS regional accents is also an essential component of learning EIL. Many pronunciation teaching materials are geared toward intelligibility for L1 receivers only and there is no pronunciation book that gives learners practice in adjusting their pronunciation to suit the needs of different interlocutors or speech situations.

Levis' (2005) proposed *intelligibility principle* which is directly relevant to teaching spoken English by emphasising comfortable intelligibility and listener friendly pronunciation. Similarly, Walker (2005, 2010) supports the view of teaching pronunciation of international intelligibility by following the LFC of Jenkins (2000) on the basis that in teaching pronunciation for EIL besides ensuring that mutual intelligibility across varieties is maintained, EIL phonology teacher education and research must be reconsidered as these two elements directly influence classroom teaching (p.195). Also, it is clear that native speakers of inner circle varieties are no longer considered the ideal of English

language teaching (Higgins, 2003) and there should be a reconceptualisation "toward an agreed international (rather than NS) norm" (Jenkins, 2002, p. 85).

The work of Walker (2010) made huge contributions to the field of EIL pronunciation teaching, and provided practical directions of teaching pronunciation in an EIL classroom. In this new multilinguistic world, the notion of linguistic imperialism must be challenged and L1 pronunciation of the learners given precedence. To explicate, EIL pronunciation teachers need to identify features of local accents that are also requirements of the LFC, subsequently learners should be encouraged to imitate LFC pronunciation and also recognise non-core features of their own pronunciation. Generally, the features of local accents that EIL teachers need to identify are consonants, consonant clusters, vowel length, and nuclear stress placement. Following identification of the afformentioned features a pronunciation teaching plan can be considered. Walker (2010) purported that there are six main topics that should be taught in three phases. The summed illustration of the proposed EIL pronunciation methods especially for NNSs learners are presented in Table 2.2

Table 2.2

Pronunciation Teaching Plan (Walker, 2010, pp.142-143)

Topic	Phase I	Phase II	Phase III
Broad Aim	Introduction of EIL concept	Consolidation of competence in EIL	Moving beyond EIL
Consonants	Basic LFC consonants	Production of LFC competence/ the concept of the aspiration of /p, t, k/ in word-final position	Production of /p, t, k/ at the beginning of stressed syllables
Clusters	Introduction of addition and deletion in initial consonant cluster	Practice with word-initial and medial consonant clusters that are difficult for a given first-language background	Possible deletion of /t, d/ as for native speaker norms
Vowels	Introduction to the idea of vowel length and quality	Introduction to the shortening of vowel length after voiceless consonants.	Length of dipthongs
Nuclear Stress	Introduction to the idea of nuclear stress	Practicing the deletion of nuclear stress in simple discourse	Practice in detecting and placing word group boundaries.
Accommodation Skills	Concept of accommodation role in spoken communication	Awareness raising to which features of the learner's own pronunciation of English are most likely to prove problematic to listeners from other L1 background	Practice in perceiving variation of the substitution of the dental fricatives or /r/

Regarding EIL pronunciation assessment, Walker (2010) suggests three steps in measuring learner ability when using English for international communication, including diagnostic testing, progress achievement testing, and final achievement testing. As for diagnostic testing, he explains that it can help determine priorities for a course and raise awareness among learners to allow them to be more conscious of the problems. The test can be conducted via; for example, group tasks or peer evaluation. Regarding the progress achievement test, it aids the monitoring of progress and highlights where remedial work may be required. This type of test can be delivered in the form of testing learners'

pronunciation of individual words or sentences. Lastly, the final achievement test helps to analyse the impact of pronunciation on intelligibility and should be assessed using a communication task that reflects the performance of the learners throughout the course. In any case, Walker (2010) continuously emphasised that the test should take a holistic approach rather than a discrete item approach. There has been a further shift in perspective to the recognition of the authority of NNSs for conducting assessments in EIL as they are now the majority users of the English language in an EIL context (McKay, 2002).

The development of English from a monocentric to a pluricentric language is evident, driven by globalisation, and has resulted in the creation of numerous varieties of English across the globe. Such differences result in detriments to intelligibility for English users with a different L1. Hence, the role of English teachers and researchers should be focused in terms of the adoption of the appropriate position and actions to facilitate the students' ability in handling such complex English usage. McKay (2002) emphasises that teaching EIL must ensure reciprocal intelligibility among speakers of different English varieties and there is an urgent need for empirically established phonological norms and classroom pronunciation models of EIL.

2.6 The Association of Accentedness and Intelligibility

2.6.1 Definition of Accentedness

A foreign accent is a complex aspect of language that affects speakers and listeners in both production and perception. An accent can be perceived as stronger if it has more non-native features or if the non-native features are more pronounced (Cunningham, 2010a). Upon perception of a foreign language judgements are made, consciousness or unconsciousness, about whether the person is a native or non-native speaker of that language (Major, 2001). Flege (1984) reported that accents can be detected after listening to only 30ms of speech. Non-native speech is undoubtedly more or less accented due to the phonetic realisation in L2 being markedly different from native speech

patterns (Strange & Shafer, 2008), and foreign language pronunciation usually contains so many assimilated L1 traits that it is possible to systematically describe a non-native accent. Beinhoff (2013) states that the term *level* of accent is used in a non-judgemental way and does not refer to the proficiency or linguistic ability of the speaker but purely to the features of accent and to what extent they are comparable to the reference accent. A foreign accent does not necessarily reflect the general linguistic proficiency of a speaker as accents are influenced by numerous variables and does not depend on factors such as proficiency in grammar and vocabulary, rather it results from a breakthrough of native language phonology into a second language. Nash (1969) firmly states that the proficiency of L2 speakers is less important than the degree of accentedness of speech for intelligibility. Therefore, a speaker with the lowest level of proficiency but with only a slight accent can be found more intelligible than those with high proficiency/strong accent levels.

Accentedness is the degree that an L2 accent differs from the variety of English commonly spoken in the native speaking community (Derwing & Munro, 2005). Furthermore, foreign accent is acoustically perceptible on different levels because accent is a continuum (Flege, 1980; Major, 1987). An accent manifests itself on the segmental and suprasegmental level, of which the former has been studied meticulously in terms of interlanguage phonologies (Moyer, 1999, 2004). It is well known that not all differences between mother tongue and a foreign language will necessarily be manifested as a foreign accent. As a rule, according to MacDonald (1988), interference is more likely to take place if the feature of the foreign language is more marked and the feature of the mother-tongue is unmarked in terms of the crucial tenets of the theory of markedness. To explicate, level of accent refers to the extent of influence of NNSs' indigenous L1 features in their articulation of a foreign language. The English accent is bound with attitudes, with accented speech often viewed negatively by NSs and as a butchering of Queen's English (Buripakdi, 2008). However, the use of non-standard and non-native English is becoming

more institutionalised than educational authorities care to admit, as can be seen in the language mix of Manila Tanglish (a blend of Tagalog and English) which is widely used in the Philippines. The issue of making judgments on NS and NNS pronunciation highlights the issue surrounding the existence of a standard language or dialect that is used as the reference or base line when making accent judgments. Overall, increased reduction of English original characteristics in the use of English is characterised by extreme variability and unpredictability. However, standard accent of a language especially within a global language, such as English, is still tangled and difficult to define (Jenkins, 2000, p. 196). Generally, it is believed that a strong non-native accent will interfere with intelligibility. In EIL intelligibility, accent is defined as the degree to which an individual's speech patterns are perceived to be different from the local variety, and how much this difference impacts the comprehension of listeners who are unfamiliar with the local variety. Therefore, the strength of an accent denotes the degree of difference. In line with Jenkins (2000), Cunningham (2010a) states that the features of NNS speech which distinguish it from NS speech are often difficult to delineate as phonetic differences between the accents represented are varied. However, the most fundamental features to look at are vowel quality and quantity, and consonant articulation.

The present research aligns with the accent literature discussed and attempts to investigate how much Thai-accented English deviates from the pronunciation of English native speakers. It applies a comparison of Thai to English standard varieties in the same sense that standard pronunciation is not thought of as a concrete language. This is in adherence to the concept of standard English as an idea in the mind rather than reality, a set of abstract norms to which actual usage may conform to a greater or lesser extent (Milroy & Milroy, 1991; Cunningham, 2010a).

2.6.2 Judging Accentedness

Accentedness judging is the judgment of the degree of foreign accent on a particular segment of speech: how deviated the pronunciation is from the standard or

native reference of that language. A common method employed in intelligibility research is to judge level of accent before assessing overall intelligibility (Pongpairat, 2011; Nejjari *et al*., 2012). In fact, foreign accent in any speech from individual speakers can be viewed as a continuum from strong accent to weak accent (Flege, 1980; Major, 1987). A meta-review of 60 articles regarding global ratings of pronunciation conducted by Nowacka (2010) illustrated that the most common method used for assessing level of accentedness was the Likert scale. The process is a holistic assessment based on a point scale which usually comprises between 3 and 10 parameters with odd numbers more common than even numbers. In some cases, the raters were asked to evaluate the accent in relation to comprehensibility and acceptability as well. It must be noted that in most of the studies, NSs were chosen as accentedness raters. This ethnocentric model is supported by Jesney (2004), that accentedness judgement should not be made by NNSs and ought to be confined to NSs speakers only, since very few NNSs ever achieve native-like speech. However, Scheuer (2008) argued that NNS judges were more critical and evaluated foreign accent more harshly than their NS counterparts. There is also contention in the field regarding the use of trained or untrained accent judges. Jensey (2004) highlighted that emphasis was often placed on the ability of untrained and inexperienced judges to reliably evaluate foreign accentedness. Additionally, Thompson (1991) reported that phonetically trained listeners were more tolerant than their untrained counterparts. In addition, it was found that the judgment of rhythm classes was based purely on impressionistic and subjective judgments. Cunningham, Andersson, and Engstrand (1989, as cited in Cunningham, 2010a) demonstrated that phonetically naïve listeners were able to estimate global accentedness on a scale in a way that correlated strongly with expert phonetic judgment on a variety of parameters.

The inter-rater method was demonstrated as the predominant data collection method employed within EIL intelligibility research regarding measuring level of foreign accent. It was utilised in numerous studies such as, Hardman (2010) for Chinese accent,

Pongpairat (2011) for Thai accent, and Nejjari *et al*. (2012) for Dutch accent. The inter-rater method requires level of accent to be judged by more than one judge or one group of judges. Initially, the level of accent is judged by the researcher, and then by trained phoneticians, and finally by TESOL instructors who have shared L1, and English NSs who are experienced or familiar with that accent. The research conducted by Nejjari *et al*. (2012) also asked general listeners who were English speakers to judge the accent, as the acoustic perception of layman NSs was deemed relevant. As illustrated, in intelligibility research, both trained and untrained phoneticians are employed to evaluate level of foreign accent and rank as appropriate. However, it is not uncommon for research to employ the same sample of raters to assess both level of accent and intelligibility as shown in the wide range of work by Munro and Derwing e.g. Munro and Derwing (1995a, 1995b) and Derwing and Munro (1997), Derwing *et al*. (1997), and Munro *et al*. (2006)

The review of literature highlighted some important considerations. First, intelligibility measurement is the rating of how sound can be recognised, while accent rating is the rating of pronunciation deviation from the notion of native-like (Munro & Derwing, 1995a). As such there is a loss of control by using the same raters for both accent and intelligibility, as level of accent may be assessed via the L1 of the raters which varies among individuals. Additionally, valid phonological knowledge is crucial in judging accent especially when the language being judged is not the native language of the judge. To ensure there are no crossover effects separate groups of judges should be used when assessing each variable. From review of the methods employed for accent judging, it is suggested that the most valid method would be to utilise the skills of both trained phoneticians who can be either NSs or NNSs, and NSs untrained phoneticians. Following their individual assessments, the level of accentedness would be obtained through analysis of the concurrence between both groups of judges' ratings. Otherwise, if one wishes to assess accent through untrained phoneticians only, the reliability must be investigated to ensure they can give an accent rating in agreement with trained phoneticians.

2.6.3 Effect of Accent on Intelligibility through Different L1 Listeners

As heavily emphasised, intelligibility in pronunciation across English varieties is one of the overarching issues investigated in English as an international language research. Mainly, this issue is investigated through the strands of how non-native varieties of English are intelligible to English native speakers (Callary & Than, 1998; Lu, 2007; Narith, 2009; Pongpairat, 2011), to non-native speakers (Matsuda *et al.* 1999), or to both (Hardman, 2010; Walt, 2000). The issue is investigated further in how native English is intelligible to non-native English speakers on the basis that the perception of L2 speech among different L1 groups of listeners is not identical, and non-native utterances tend to require more time to process than native produced speech (Best & Tylor, 2007; Munro *et al.*, 2006).

Overall comprehensibility or ease of interpretation is implicit in pronunciation judgement (Gass and Varonis, 1984). The interplay between intelligibility and comprehensibility is a pervading issue contributing to the intelligibility debate within EIL – the dichotomy between the need to improve speaker intelligibility or improve the flexibility of NS and NNS listeners. Rajadurai (2007) examined past research on intelligibility studies and suggests ways forward to advance the field of investigation. Among other concerns, the role of the listener was not considered as important as the speaker's ability to accommodate their speech receptively and productively to their potential interlocutor in intercultural settings. This resonates with the listener-dominated norms of intelligibility discussed in this study: the extent that one can retain their L1 accent of English is dependent on the L1 listeners they are communicating with. A review of studies on the perception of English among different L1 users has shown consensus regarding the differences between NS and NNS perceptions of intelligibility for English accented speech. Cunningham (2010a) indicated that NSs and NNSs can understand the speech better when the accent is weaker. Koster and Koet (1993) and Shockey (2003) reported that NNSs had more difficulties in perception of a foreign accent, and further explained that perception of a foreign accent varies across different L1's with a diversity of

problematic features resulting in intelligibility failure. In accordance with the reported research, Win (1998), Lu (2007), Pongpairat (2011) and Nejjari *et al.* (2012) indicated that stronger L1 accented English led to a lower level of intelligibility for English NS listeners and accent familiarity was beneficial for shared L1 listeners. As demonstrated, the results reported regarding the effect of accent on intelligibility are consistent. NNSs often depend more on context and they rely on phonetic cues more so than NSs (Strange & Shafer, 2008). On the whole, NNSs performance at recognising English casual speech is considerably lower than NSs. Even with decades of teaching RP and GA pronunciation the proficiency level that learners can be expected to achieve is still questionable (Wu & Ke, 2009) and therefore intelligibility of accented speech in this time of demographic expansion requires due attention.

The listener-dominated norms of intelligibility are a critical response to the native-non-native dichotomy, placing emphasis on the communicative adjustment that learners make to their accent based on their interlocutors (Jenkins, 2000, p. 18). The growth of English into a neutral communication medium, enriched and diversified by various cultures, must be freed from the ideology of Standard English norms. The most prominent goal of communication is the desire to be understood, and this notion is grounded in accommodation theory (Giles & Powland, 1975). In the context of EIL communication, together with the sphere of accommodation theory, the goal of the communication process is bound up with the process of convergence. Convergence is when speakers adjust their speech to make it more comprehensible to particular interlocutors and in particular settings. Jenkins (2000) states that in communication, speakers will consider the listeners' knowledge and background which includes social and regional accent, and identify what pronunciation features are crucial to intelligibility. These resources will urge them to converge their own use of language and adjust it in the direction of more target-like to increase mutual intelligibility through the desire to be understood. More specifically to the talk among L1 and L2 speakers, the convergence of

the language is the simplified version of L1 which is less syntactically complex, has fewer pronouns, use of higher frequency vocabulary, more clearly articulated pronunciation, avoidance of contraction and weak form, and a slower speech rate (Saito & Poeteren, 2012). In addition, it is natural that NSs tend to evaluate the language of NNSs first. During this evaluation, accent and pronunciation are evaluated first, following this, speech will be accommodated as appropriate (Jenkins, 2000).

There is a substantial body of research which has established that when there is a significant difference in phonology between the speaker and the listeners' language groups (higher degree of accent), intelligibility levels are likely to be the lowest (Deterding & Kirkpatrick, 2006). However, Munro and Derwing (1995a) and Derwing and Munro (1997) contradicted this suggestion by claiming that there is yet no strong indication that reduction of accent necessarily results in increased intelligibility. Munro *et al*. (2006) also claimed that shared L1 benefits were not considered a significant advantage for intelligibility. Regarding the issue of shared L1 benefits and accent familiarity on intelligibility, due to the methodology employed in their works, the claims are doubted and challenged in this study. The work of Munro and Derwing (1995a), for example, revealed that speech rated with a moderate or heavy accent can be transcribed accurately, this result was considered a basis for their claim that increased accent does not necessarily result in reduced intelligibility. Furthermore, the results underpin their suggestion that since there is a negligible relationship between accent and intelligibility, pronunciation should not be the focus of global accent reduction, but only on those aspects of the learners' speech that appear to interfere with listeners' understanding. (p. 305). Most of Derwing and Munro, and Munro and Derwing in the 1990s, employed as the methodological framework in a considerable amount of the intelligibility studies in EIL, pinned down several statements concerning the issue of accent and intelligibility. First and foremost, they repeatedly stated that there was a relatively low amount of work investigating the relationship between accent and intelligibility. Furthermore, among those existing, there was no indication that

a reduction in accent necessarily led to an increase in intelligibility, hence the issue of L2 accent on intelligibility remains unsolved (Munro & Derwing, 1995a, p. 287-288). Regarding this, one should bear in mind that from the 1990s until now, this area of research has flourished and the body of work has dramatically increased which provides more evidence indicating that lower accent does in fact interact with intelligibility. However, the apparent contradictions among the studies may be, at least partially, explained by the differences in methodology which are discussed further in the following section. In their wide range of works, it was not that accent did not negatively affect intelligibility, in fact a correlation existed but as a weak and marginalised relationship, thus, it is not just to generalise that a stronger accent does not impede intelligibility. In addition, regarding the issue of L1 retention or elimination in EIL pronunciation, one of the fiercest defendants of the rights of NNSs, Jenkins (2000), questions the validity of the native speaking model by raising the issue of linguistic identity. She claims that the proposed elimination of L1 accents may limit the ways in which users can express their linguistic identity and suggests that the retention of endonormative varieties may equip NNSs with a means to express it. With the exponential growth of English users, the fostering of a new paradigm is imperative, one which promotes the inclusion of the many varieties of English and embraces the unique local conventions and dialects of the communities.

As illustrated, the reports and views on the effect of accent on intelligibility are inconsistent. Munro *et al* (2006) postulate that advantage in shared L1 was not significant for intelligibility. Taking a different stance, several researchers (Bent & Bradlow, 2003; Hongyan & Van Heuven, 2007; Smith & Bisazza, 1982) indicate that shared L1 does indeed benefit the perception and intelligibility of L2, furthermore there is evidence of weaker accents having higher intelligibility for both NSs and NNSs. As such, a multi-perspective exploration of this issue is required which takes into consideration a range of contributing factors. In this respect, the issue of listeners' L1 must be considered in

intelligibility measurement as the differences and similarities among L1 and L2 are commonly assumed to affect the degree of intelligibility. Also, when the listeners are native speakers, their innate command of the language should be considered an effect on intelligibility as well. Is it possible to claim that as the native speakers of the language, when their language is pronounced in L2 speech, they cannot understand it better than speakers of other languages?

More specifically to NSs, according to the literature, the top-down processes and size of mental lexicon are two main advantages that cannot be ignored in the debate regarding language intelligibility (Davis & Johnsrude, 2007; Mattys, Bernstein & Auer, 2002; Jenkins, 2000; Schmid & Köpke, 2009). On the other side of the coin, when the listeners are non-native speakers, is it possible that their unfamiliarity to the accent and the lack of innate NS skills result in a considerable detriment to their phonological understanding of the speech, more so than those sharing L1 and those being native speakers? The lack of awareness of speech accommodation according to the listeners and relying on the assumptions of NNSs speech, that they can legitimately communicate in English according to their L1, can lead to severe problems, such as the familiar territory to anyone marooned at an international airport by a delayed flight. This implies and was hypothesised by this research that the L1 of listeners is a main contributing factor considering level of appropriate accentedness.

Consequently, in this research, L1 listeners were classified into three groups according to the interaction of English as an international language, that is the use of English between the speakers and listeners that share the same L1, the use of English between native speakers of English and non-native speakers of English, and the use of English between non-native speakers of English who do not share the same L1. Native speakers were included in the remit of this study to bridge the gap reported in the LFC which excluded NSs as communicators and to attain the most well rounded intelligibility

study in EIL. In fact, it is very difficult to describe international intelligibility without reference and recourse back to NSs varieties and speakers.

2.6.4 Effect of Shared-L1 on Intelligibility

Shared L1 as an aid to intelligibility has been reported as highly significant in the literature (Bent & Bradlow, 2003; Hongyan & Van Heuven, 2007; Smith & Bisazza, 1982). It is based on the principle that listeners process spoken language in ways that are tailored to suit the phonological structure of their native language. This is best documented with respect to the segmentation of continuous speech into its component words. The syllable based segmentation of speech was demonstrated for syllable-timed language speakers but not for stressed-timed language listeners. In sum, L2 listeners did not segment speech in the same way as L1 listeners, rather, they applied their L1 listening strategies to the non-L1 input (Cutler, Kim, & Otake, 2006). The linguistic interdependence hypothesis (LIH) also states that reading as well as listening performance in L2 is heavily in accordance to L1 reading and listening ability, especially in vocabulary knowledge, which is a significant predictor for the successful receptive skill in L2 accented speech of native speakers of that accent (Vandergrift, 2006). According to the scope of L2 accented speech, shared L1 is the effect based on the principle that L2 accents are primarily characterised by transfer from the L1: the system of consonants and vowel categories, phonotactics, stress patterns, and intonation as well as other features of the sound system (Harding, 2011). Therefore, listeners who share a speaker's L1 tend to have an intimate familiarity with the phonological patterns of that speaker's L2 accent. Preliminary studies indicate that NNSs often find understanding L2 speakers from their L1 easier to understanding than the L2 speech of a different L1. In addition, for those sharing the same L1, errors in grammar of L2 speech do not affect intelligibility (Jenkins, 2000, p. 36). As a result, it has been established that shared L1 listeners are better at understanding the accent of L2 as reflected by several terms coined in the field as *speech intelligibility benefits* (Bent & Bradlow, 2003; Algethami, Ingram, & Nguyen, 2010), *interlanguage match* (Anderson-Hsieh &

Koehler, 1988; Biblow, 1989; Brown, 1968; Eking, 1982; Richards, 1983; Hardman, 2014), and *accent calibration* commonly used in speech and language technologies (Barry, Hoequist & Nolan, 1989). The shared L1 intelligibility advantage has been explored empirically in WE and there is evidence in the literature that intelligibility is better for those who share the speaker's L1 than for speakers of a different L1 (Jenkins, 2002; Smith & Bisazza, 1982). The findings were considered a result of those sharing the same L1 sharing the same patterns of selection and integration in the recognition of phonetic segments (Strange & Shafer, 2008), and variations such as sound substitution and conflation, consonant deletion, and addition. Nash (1969) pointed out that intelligibility requirements were reduced when the speakers and listeners come from the same first language. Also, Yule, Wetzel, and Kennedy (1990) reported that NNSs were able to understand their own accented speech better than that of others who do not share L1. Jenkins (2000) asserts that one of the crucial factors affecting intelligibility is "familiarity with L2 accent" (p.183) and Hardman (2010) reported that Chinese accented English was easier to understand for Mandarin listeners, but listeners who were not Chinese L1 found American English more intelligible. Cunningham (2010b) also indicated that among three groups of listeners: English NSs, Swedish NSs, and Vietnamese NSs, Vietnamese vowels and consonants were best intelligible for Vietnamese listeners. Deterding and Kirkpatrick (2006) recorded 20 different speakers from neighbouring countries in the Association of Southeast Asian Nations – Cambodia, Vietnam, Laos, Myanmar, Thailand, Malaysia, Singapore, Indonesia, and the Phillipines – speaking in groups of three to four. Their speech was analysed for shared features in English pronunciation and the effect of those features on intelligibility evaluated. The findings demonstrated that the shared features, though non-standard, enhanced rather than impeded intelligibility. Misunderstanding occurred only when non-shared features were evident, resulting in communication breakdown. Even among NSs of English themselves, listening to an unfamiliar NS dialect yielded various differences in understanding over listening to a familiar English dialect.

To illustrate, Adank, Evans, Stuart-Smilt, and Scott (2009, as cited in Ockey, Papageorgiou, & French, 2016) reported that listening to an unfamiliar English accent resulted in lower scores for NSs than listening to the same input from English speakers with a familiar accent.

Although the conceptualisations and measurement of accent in relation to intelligibility have been varied, the results affirm that familiarity to an accent is considered an advantaged in understanding L2 speech through different degrees. That is, shared L1 backgrounds led to an advantage in hearing utterances from one's own accent (Smith & Bisazza, 1982; Gass & Varonis, 1984; Smith, 1992; Jenkins, 2000). However, there are contradictions in the reported results from authorities such as Major *et al*. (2002), Munro *et al*. (2006) and Harding (2012). These works found that the advantage in understanding accented utterances from speakers who share the same L1 were reported in small numbers and sporadically observed. For example, Major *et al*. (2002) reported that Spanish speakers demonstrated a small intelligibility advantage when hearing Spanish-accented English. Munro *et al.* (2006) conducted a study which employed native Mandarin, Cantonese, Japanese, and English listeners who were asked to evaluate the same set of English speech samples from NSs of Cantonese, Japanese, Polish, and Spanish. It was discovered that the listeners exhibited a moderate to high correlation in intelligibility and comprehensibility scores, and ratings for accentedness regardless of their own first language backgrounds. To elaborate, overall, Derwing and Munro claimed that listeners did not exhibit intelligibility benefits for speech produced in their own L1 accent - non-native speech can be understood by native listeners just as native produced speech from a familiar dialect (Munro *et al.*, 2006). Harding (2012) tested the shared-L1 advantage on an academic English listening test featuring speakers with L2 accents: Mandarin and Chinese. The results showed that shared-L1 effects were not the same across the two tests featuring highly intelligible speakers with L2 accents. Japanese L1 listeners were advantaged on a small number of items on the test featuring the Japanese-accented speaker, but these were

balanced by items which favoured non-Japanese L1 listeners. By contrast, Mandarin Chinese L1 listeners were clearly advantaged across several items on the test featuring a Mandarin Chinese L1 speaker. The researchers postulated that although accentedness, comprehensibility, and intelligibility were related, they were partially independent of one another. The variability of reported results provokes debate, and drives continued research to identify and determine the accuracy of the shared L1 benefits hypothesis on L2 comprehension.

Consensus has yet to be reached regarding the impact of shared L1 on intelligibility, but there has been no move to propose the complete rejection of the benefits. For the purposes of this research ,a review of the literature of those fully supporting the notion of shared L1 benefits and those who tentatively acknowledge such advantages illustrates that regarding the issue of shared L1 benefits on L2 speech intelligibility, it is assumed that in a weak accent, such benefits though existing do not have the significant role. On the contrary, when the accent is strong, shared L1 advantages between the speakers and listeners are relied upon more.

2.6.5 Effect of Nativeness on Intelligibility

From the review of literature, it is evident that native speakers are not faced with the serious intelligibility challenges of NNSs when processing their accented speech. However, not sharing the same L1 as the speaker can be considered a disadvantage in terms of accent familiarity as pointed out by several studies (Munro and Derwing, 1995a, 1995b; Nejari *et al.*, 2012). Varonis and Gass (1982) pointed out that for NSs both grammar and pronunciation affect the intelligibility of L2 accented English. This is in line with Tyler (1992) showing that lexical discourse markers, lexical specialty, and syntax of NNSs affects the ability of NSs to understand the speech. In this research, the two potential compounding features that are more readily harnessed by native speakers and which aid the understanding of accented speech effectively are top-down processing skills and vocabulary repertoire.

2.6.5.1 Top-down process. Crystal (2003) states that NSs are believed to have intuitive knowledge regarding their language, something that NNSs can never attain through their second language acquisition. It has long been known that when NSs are listening to their own language as accented speech, top-down processes are actively engaged. Brown (1990, p. 59) proposes that NSs process utterances in L2 by means of top-down processing with the use of context rather than the predominant reliance on bottom-up processing that NNSs exhibit. Top down processing is the use of higher level, non-sensory information to predict or interpret the lower units of information in a section of data. In relation to word recognition, according to Richards and Schmidt (2002), higher-level information is knowledge of permissible words as well as the actual words of a language while lower-level information is the basic phonetic input. NSs will use expectancies, guess, predict, or fill in the perceived event of the message. Additionally, NSs can automatically presume what can and cannot be a word, and what syntactic permutations are possible. In intelligibility of L2 speech, such processing will help NSs guess what the targeted utterance is by relying less on the phonetic data of the word but on their experience as the native speakers of the language.

To thoroughly investigate the impact of nativeness on intelligibility of accented speech, the phonological intelligibility researcher is required to be open-minded enough to accept that though pronunciation is a prominent factor for international intelligibility, intelligibility is indeed an elusive and complex phenomenon and one that cannot be guaranteed by pronunciation alone. When encountering an utterance, it is natural that we desire to fully understand and interpret it over the recognition of sounds only. Full understanding a message is partially driven through pragmatics or illocutionary force as previously mentioned in the definition and differences of intelligibility, comprehensibility, and interpretability. What is more important is the ability to acquire illocutionary forces is more evident among native speakers of that language, rather than its non-native speakers, as they are culturally defined. Grammar, however, plays an integral part in intelligibility

for NSs more than NNSs of the language. The data of Jenkins (2000, p. 6) revealed that when the sentences contained both phonological errors and grammatical errors, there was greater detrimental impact on intelligibility of the speech for NSs, higher than those sharing the same L1, the NNSs of that language. This implies that when receiving a message in their native language though spoken by NNSs, NSs do not purely rely on acoustic perception rather, top-down processing, grammatical elements and lexis automatically come to the fore to aid intelligibility. Conversely, NNSs demonstrate less intelligibility issues when faced with both phonological and grammatical errors because they rely heavily on phonetic output and neglect all grammaticality of the message which indicates that the application of top-down processes are higher among NSs. Top-down processing is considered advantageous when there are errors in pronunciation due to the ability to predict and employ cues from the context to access the targeted word by the speaker more effectively.

     2.6.5.2 Vocabulary size. Another pertinent benefit of nativeness when encountering accented speech is the stored vocabulary size known as mental lexicon; a person's mental store of words, their meanings and associations (Richards & Schmidt, 2002). It has long been known that lexical and collocation competence is important for both language production and reception. Furthermore, the linguistic interdependence hypotheses (LIH) states that reading as well as listening performance in L2 is heavily in accordance with L1 reading and listening ability especially in vocabulary knowledge, and vocabulary knowledge is a significant indicator of L2 listening comprehension ability; the ability to relate the acoustic trait with the word in their mental lexicon (Vandergrift, 2006). The LIH enables language users to process language fluently under real time conditions, to disambiguate the syllables in polysyllabic words, and to understand idiomatic expressions such as native like.

     Such statements as widely cited in lexical studies, such as Lewis (1993, 1997), Moon (1997), and Thornbury (1998) imply that native speakers are better at lexis

processing than non-native speakers of the language, and it is a competency that native speakers intrinsically possess. Bradlow and Pisoni (1999) stated that NNSs had more difficulty than NSs with lexically difficult words especially in connected speech. In general, it is understood that L1 users have a larger repertoire of options to choose from and therefore have more lexical variation in their choice of collocation and lexis. Ergo, when the language user has a larger similar sound structure to the target word, their phonological response to that word is more effective. In addition, an L1 user will attach less to the phonology of the words due to more developed semantic links in the mental lexicon, while L2 users rely more on phonological links when encountering unfamiliar words. Spöttl and McCarthy (2004) asserted that L1 lexicon is structured differently from L2 lexicon and that L1 lexicon is more stable and can be accessed more readily than L2 lexicon. In addition, L2 lexicon is more closely linked to phonetics (sound) than the L1 associates. There are important differences in lexical processing between native and non-native speakers of a language; for instance, NNSs are slower in recognising and presenting collocations whereas NSs are able to produce collocations significantly more frequently (Siyanova & Schmitt, 2008; Wolter & Gyllstad, 2011). Furthermore, the lexical choice that NS speakers choose differs between NNSs and NSs listeners. For NNS listeners, the NS narrator tended to use more frequency words as echoed by Arthur, Weiner, Culver, Lee, and Thomas (1980) who investigated the communication between a NS airline agent and customers.

The results of the research highlighted that the airline agents used more limited word choices for conveying identical information than with NSs; for example, they use plane with NNS customers and aircraft when the customers were NSs. Hardman (2010) discovered lexicon familiarity as a significant predicator for intelligibility, which indicated that the avoidance of lexical confusion strategy was implemented in communication with NNSs. As implied by Derwing and Munro (2001a), NSs have an advantage over NNSs when coping with L2 speech in terms of morphological knowledge and lexical access that

are intrinsically established. From the perspective of lexical processing, NSs familiarity with words, their larger vocabulary repertoire, and their association of the phonetic and lexis in mental lexicon all ease access to the word as targeted by the speaker of L2 speech more effectively. Given the various features of nativeness in intelligibility, the advantages in the facilitation of L2 speech processing are undeniable.

Though at the time of conducting this research, top-down processing and vocabulary size of native speakers had not been experimented explicitly with EIL intelligibility, with the existing theories concerning the two principles and previous studies on NSs intelligibility on accented speech, this research assumed that NSs are effectively capable of dealing with L2 accented speech given the advantages of top-down processing and vocabulary size as discussed. However, further study is required to explore if the nativeness advantages are more or less significant than shared L1 benefits in phonological understanding L2 speech.

2.6.6 Effect of Non-Nativeness and Non-Shared L1 on Intelligibility

Contrary to the top-down process of native speakers, non-native speakers, when processing information, rely heavily on bottom-up processing which is the use of present information at the input level to achieve a higher level of meaning (Richards & Schmidt, 2002). Since L2 speech tends to require more processing time that L1 speech, it is evident that the communication of English or any language between NNSs is considered more problematic as there is a requirement for more time and effort to be spent in negotiating the language. There is agreement that intelligibility is negatively affected when the pronunciation contains different phonological traits from the listeners' L1 system (Eisentein & Berkowitz, 1981; Anderson-Hsieh & Koehler, 1988; Jenkins, 2003; Hannah, 2004; Field, 2005). As the English accented speech is from a different L1, non-shared-L1 listeners, routinely apply their L1 listening strategies to the non-L1 input. In other words, when listeners cannot accommodate non-L1 speech input to their L1 structure, they are better able to hear the real acoustic structure of the utterance (Cutler *et al.*, 2006). It is

further specifically stated that listeners with a different L1 from speakers felt tired, anxious, and bored during acoustical perception of a foreign accent and were required to put extra effort to repairing phonological distortions (Fernandez & Gonzales, 1988; Puerto, Lecumberri & Lacabex, 2015; 204). This was another rationale of Jenkins (2000) in establishing the LFC as a tool to facilitate communication between NNSs and NNSs in ELF settings. In her interlanguage talk data, errors in pronunciation results in more problems for NNS listeners than those sharing L1 with the speakers and NSs because they have a narrower band of allophonic tolerance. Thus, for NNSs, their lack of shared linguistic background to the accented speech forces them to focus on the acoustic signal only (p.82-83). This is further supported by Ockey and French (2014) who reported that the stronger the accent was, the less speech recognition of L2 there was for NNSs. In addition, the "non-understanding" of NNSs includes more work to achieving a resolution (Varonis & Gass, 1982, p. 83). Another notable behaviour of NNSs is the tendency to shut down or close up when interacting with an English NNS, this is assumed as due to the effort and energy required in comprehension and intelligibility. As demonstrated when communicating with NNSs, more efforts are required from both speakers and listeners. Communication for NSs is dominated by top-down processing, however, for NNS communication, a bottom-up communication strategy is far more significant. NNSs will use the linguistic form to imply the meaning of the context which is considered the building up of an interpretation from the lowest linguistic unit: sound. This process reverts NNSs to an over-reliance on bottom-up skills, which is the focus on acoustic signals. In this situation, when non-shared pronunciation features occur, intelligibility problems are virtually inevitable. Nash (1969) explained that if the speaker and the listener come from a different L1, communicating in a foreign language requires more modification in the perception of imperfect speech to increase intelligibility.

When considering speech production, it is evident that NNSs speak more slowly than NSs for many reasons including undeveloped syntactic and morphological

knowledge, slower lexical access, and prosodic patterns that are less well established than NSs (Derwing & Munro, 2001a). As discussed, the huge differences in NNSs and NSs language proficiency and lexis is one of the crucial elements affecting this. Derwing's (1990) investigation into speech rate, demonstrated that NSs slowed their speech rate for their NNS listeners in terms of pause. This work, alongside other works cited, believe in foreigner talk (FT), that the speech will be modified as more appropriate to the listeners and in the communication between NSs and NNSs, NSs are dominant and therefore adjust their speech to the NNSs listeners. This indicates that NNSs do require more time to comprehend L2 speech because they need to assimilate what they have heard under conversational conditions and understand the elements of the test as they relate to each other (Jenkins, 2000).

The issue of communication between NNSs themselves as posing more problems than other groups of communicators is highlighted by dramatically less contradiction throughout studies. In other words, there is concurrence regarding NNSs as the group of listeners that encounter the most problems in EIL communication. As indicated by Grimes (1989), the greater phonological distance between the two varieties, the less mutual intelligibility can occur. Simply put, in the setting of communication where none of the communicators are L1 speakers of that language, so called lingua franca setting, the use of that language including pronunciation tends to go back to its origins or standard rather than deviating through each L1 of the speakers. However, the issue of how level of accentedness affects intelligibility requires in depth critical exploration.

2.6.7 Native-Like Accent and International Intelligibility

Interestingly, the significant contribution made to intelligibility research by Munro and Derwing, in their wide range of works (Derwing and Munro, 1997; Derwing *et al*., 1997; Derwing and Munro, 2001a; Munro *et al*., 2006) raises the very careful claim regarding the benefits of accent reduction on intelligibility, that though the benefits exist, they are negligible. Derwing and Munro (2001b), for instance, reported that, though it is

often assumed that greater accentedness automatically leads to a reduction in intelligibility and comprehensibility, the interaction is not clear cut and in fact, they are partially independent, in that some listeners can fully understand the speech while rating it as heavily accented. Earlier research conducted by Munro and Derwing (1995a) studied the relationship between accentedness, perceived comprehensibility and intelligibility in second language learners' speech. Eighteen native speakers of English listened to English speech produced by 10 Mandarin native speakers and two English native speakers. The results demonstrated that more listeners showed a correlation between accentedness and errors, but fewer showed a correlation between accentedness and perceived comprehensibility and/or intelligibility. Their findings suggested that accentedness in NNSs English did not necessarily reduce the comprehensibility or intelligibility of the speech. Derwing and Munro (1997) extended their study by including non-native speakers of English with the following first languages: Cantonese, Japanese, Polish, and Spanish. The method required NS listeners to identify the speakers' L1 and rate their familiarity with the accents. The results confirmed earlier studies regarding the correlation between familiarity and intelligibility scores. Furthermore, a correlation between accent, perceived comprehensibility, and intelligibility was found.

With closer inspection, the review of Munro and Derwing's works, with particular focus on their earlier work from the 1990's, which proposed a stronger view than later studies regarding the non-necessities of accent reduction as an advantage in intelligibility, highlighted some important issues. First, was the issue of accentedness judgment. Throughout their work, for instance Munro and Derwing (1995a), and that of their supporter, Kim (2008), the relationship of foreign accent, comprehensibility, and intelligibility was explored. However, there was no systematic judgement of level of accentedness of speech samples employed, using either trained or untrained phoneticians, to allow for consensus agreement of accentedness level, but instead employed the same judges as those rating intelligibility. Arguably, the use of listener's judgment on level of

accent of L2 speech comes with limitations. Their judgment may be influenced by such factors as their experience with accented speech or personal bias to a particular accent or voice. The results from Preston (1996) demonstrated that American Southerners were often characterised by those from the other states as incorrect and unintelligible even though they generally displayed affirmative attitudes towards Southern American English. Furthermore, Mettler (1989) discovered that some speakers of English held negative judgments of NNS speech although they were able to understand the speech. Studies such as this reveal that a listener's attitude towards other accents can affect accentual perception instead of reflecting actual intelligibility.

In fact, most of the earlier studies presented above have highlighted that informants are capable of performing tasks when being asked to listen to L2 speech utterances, to write down what they heard or make judgments concerning comprehensibility and accentedness. As a result, an intelligibility researcher must take into consideration the preconceived notions and attitudes of listeners and should screen the raters to recruit those aware of the sociolinguistic ecology of WE. This is to ensure their perceptions of speech reflect actual intelligibility and not their subjective negative responses to accented speakers because of impatience and inexperience with non-standard accents. This vigilance is necessary as when an evaluation or assessment is conducted, there is a requirement to train the participants to adhere to the equitable principle explicitly given in the research. It is suggested that to deconstruct the widespread preconception of NNSs accents as fragmented and incomprehensible regardless of the context, intelligibility research needs to train participants to deploy a well-articulated socio-phonological principle for a sound and fair evaluation of different accents, before dictation and rating tasks. Therefore, the use of accentedness judgment by phonetically untrained judges who are also intelligibility judges in research is deemed unreliable, although, there is evidence to the contrary which illustrates that the judging results are similar to trained phoneticians. While there is evidence to support the tendency for layman accent ratings to be comparable

to results obtained from accent judges, the reliability of such ratings is doubted. Further elaboration is required to assess the reliability of listener ratings such as: numbers of raters, phonetic expertise and qualifications, and agreement level obtained. Moreover, as acknowledged in Derwing and Munro (2001b), it is possible that in accent rating there are more factors involved than purely segmentals and suprasegmentals such as speech rate. To illustrate, Derwing and Munro (2001b) reported that a speaker with high fluency can be judged more accented as a result of a slower speech rate. However, regarding accentedness judgment, only the complex array of phonological variables should be assessed and not speaking rate. Thus, the reliability of untrained phoneticians in accented judging is debated especially without a clear provided framework which indicates what should and should not be included in the assessment. Derwing and Munro (2001b) recognised the limitations in their research and commented regarding the need to re-evaluate the interpretation of the accentedness judgment data.

As can be seen, the issue of accentedness judging *per se* is complicated and the reported results are conflicting. There are several variables to be examined such as native vs non-native judges, phonetically trained vs untrained judges, and experienced vs naïve judges. Evaluations among qualified and trained phoneticians can still demonstrate differences in overall ratings resulted by the phonetic schools they are from, such as the phoneticians trained by Daniel Jones and those by Peter Ladefoged who were found to perceive the rounding quality of vowels slightly differently (Lisker, 1989). Results from research which have only used accent ratings from intelligibility raters - untrained phoneticians, and make such claims as - the high intelligibility of *heavy* accents, cannot be considered reliable as ratings from laymen only are not deemed sufficient. There are previous studies which have reported that even though the speakers' pronunciation was not accented, it was rated as such as the speaker's pronunciation was slower with more pauses. Hence, features such as disfluency markers, speech rate, and hesitation phenomena also play a role in assessing foreign accent versus native speech (Dewaele, 1996; Lennon, 1990;

Schmid & Hopp, 2014). Therefore, while trained phoneticians focus purely on the articulatory apparatus used in speech production such as lip rounding, jaw position and so on, how can it be considered reliable when non-trained phoneticians judge accentedness with the combination of speakers' speech rate and pauses as well? The posed question does not equate to a rejection of accent ratings by untrained phoneticians especially when they are native speakers of the language. In fact, there is research indicating that untrained phoneticians display great agreement in their overall ratings especially when they are native speakers (Schmidt & Hopp, 2014). The point is, however, the ratings obtained from untrained phoneticians must be systematically crosschecked with phonetically trained raters in order to ensure agreement rating through interrater reliability. And above all, accent judgment and intelligibility judgement are not identical. That is why other intelligibility researchers such as Nejjari *et al*. (2012) employed both untrained NSs and trained phonetician judges to judge level of accent in the speech before launching it for intelligibility testing with the listeners who were intelligibility judges. Using this method, the relationship found either dependent or independent between accentedness and intelligibility can be considered more trustworthy.

Another important consideration is the selection of L1 listeners, as the selection can directly affect the results of L2 intelligibility measurement as well. In Munro and Derwing (1995a), Derwing and Munro (1997), and Munro *et al*. (2006), the Chinese language and Japanese language selected as L2 accented English in the experiment are considered linguistically close – syllable timed, tonal, more structured and with limited consonant clusters when compared to English, non-alphabetical with the use of orthographic characters (Kanji in Japanese which are Chinese characters known as logograms). This highlights how a similar L1 phonology system can result in relatively close intelligibility results for L2 speech. The researchers, following intelligibility testing, then measured participants' impressionistic feeling of the accent in each speech sample and cross checked with the intelligibility and perceived intelligibility scores to measure

comprehensibility. An investigation into the methods used, revealed that the link between accent and intelligibility relied heavily on subjective testing. Discussed as a limitation of their own work (Munro & Derwing, 1995a, 1995b), given that perceived intelligibility was subjectively rated, other factors besides actual intelligibility such as personal feeling of the listeners in understanding the speech, difficulty, fatigue, effort, and time consumed could all have affected the way participants rated the speech in relation to the accent. In addition, lack of better performance of Chinese listeners during exposure to Chinese accented English is curious. One careful point here is the use of Mandarin participants. Several works in the field that employed Mandarin speakers to perform the speech stimulus in Chinese accented English or as participants in intelligibility testing did not clearly describe which dialect of Chinese language the Mandarin speakers used which could explain why the shared L1 hypothesis did not hold for Chinese participants. Limitations of this work include the assumption of shared L1 dialect due to country of origin, in addition, their rating of the accent might be mitigated by their failure to account for item difficulty and use of a dubious measure of strength of accent.

Unlike Thailand and other smaller countries, China, one of the world's largest countries, has Mandarin as the national and standard language and every Chinese, Hong Kongese, and Taiwanese must learn Mandarin through the formal educational system. Therefore, every Chinese person regardless of their dialect identifies themselves as a Mandarin speaker. However, Chinese dialects are considered a linguistically different and separate language in terms of phonology, rather than dialects of the same language. It cannot be assumed that all participants would share the same L1 dialect, furthermore, the differences between them could be vast. In sum, dialects in China have relatively low mutual phonological intelligibility. Although possessing mutual intelligibility in terms of logograms, syntax, and semantics, they possess a lack of shared pronunciation. For example, Cantonese which is spoken in the South of China has no mutual phonological intelligibility to Hakka (dialect of the Hakka Island), Tae-Chew (dialect in the North), or

Mandarin (standard dialect). Nonetheless, with the political concerns of the Republic of China as a nation, all the different languages existing in China must be assumed as dialects of the same language - Mandarin. Therefore, it is presumed that a Mandarin speaker who possesses a different Chinese dialect may produce Chinese accented English differently, in turn affecting the results of the intelligibility study.

Lastly, similar to Derwing's previous intelligibility research co-conducted with Munro, Derwing (1990) consisted of 16 listeners with unequal numbers of L1 backgrounds (12 Vietnamese, one Romanian, and three Cantonese). Furthermore, Kim (2008), who reported no correlation between accentedness and intelligibility, also employed an unequal sample of different L1 participants as, Chinese ($n = 21$) and other similar L1 languages Korean ($n = 5$), Japanese ($n = 4$), and Mongolian ($n = 2$) while those participants whose L1 was linguistically different were considerably lower in number as Arabic ($n = 5$), French ($n = 2$), and Spanish ($n = 1$). As illustrated, the overrepresentation of certain L1 participant groups can affect the overall results of the study and lead to an inability to generalise. Back to Derwing (1990), the sample over represented Vietnamese listeners, therefore, generalising the comprehension success of the listeners as a whole was unwarranted.

That the success of the narration task in the work was analysed as lower when NSs narrators used more pauses may come from the fact that the Vietnamese participants did not find pausing helpful in facilitating comprehension of English speech, however, this may not be applicable to other English L2 users. In addition, Munro and Derwing (1995a) and Derwing and Munro (1997) employed only English NSs as the listeners or intelligibility judges. This raises questions regarding whether the non-necessities of accent reduction for intelligibility are the same when the listeners are NNSs, which is the communication context of EIL.

Regardless of the methodological limitations, though claiming that the reduction of accent may not necessarily be the case for increased intelligibility, in fact, it is evidenced that Munro and Derwing's works did not completely disregard such impact. To

explicate, all their work indicated a positive relationship between the two factors, although with varying levels of significance. However, what is more important is the effect of different levels of accent on intelligibility. The differences in strength of accent requires increased focus as accent is a continuum phenomenon. Research is now focusing on what level of accent leads to an impediment in intelligibility of the speech to different L1 listeners in order to raise awareness in L2 users regarding an appropriate level of accent. As such, in previous research, where accent was not measured for its level, it is not clear to what degree the tested accents were different from the local variety with which the test takers were familiar. Unfortunately, there is inadequate research regarding the issue of accentedness level. Derwing and Munro, as intelligibility research contributors, barely report on intelligibility in relation to level of accent. Among the few, Nejjari *et al*. (2012) reported that stronger Dutch accented English led to lower international intelligibility. More research regarding this issue is required to gain a fuller understanding of the interaction. Ockey *et al*. (2016) examined the effect of strength of accent and familiarity on comprehension with the specially developed strength of accent scale, where TOEFL test takers were the judges for American, Australian, and British accents. In their works investigating all NSs varieties of English as mentioned, accent is defined as the degree to which an individual's speech patterns are perceived to be different from the local variety and how much this difference is perceived to impact comprehension of listeners who are familiar with the local variety. The results suggest that strength of accent and familiarity affect listening comprehension. That is, as strength of accent increased, listening scores decreased: which indicated that a stronger accent required extra effort from listeners for full comprehension.

More specifically to EIL communication teaching, according to the literature, it can be seen that EIL pronunciation teaching for communicative purposes has been influenced by two contradictory principles; the nativeness principle and the intelligibility principle. The nativeness principle represents a declining autocratic paradigm where

native-like speech was the ultimate goal in teaching English before 1960's. However, soon after, it was proven that to acquire native-like pronunciation put unnecessary burden on both teachers and learners, and above all, was unrealistic and utopian, as demonstrated by past research (Lenneberg, 1967; Scovel, 1995; Jenkins, 2000). The intelligibility principle signified a shift in paradigm to local contexts, which moved beyond the Eurocentric model, with a focus on features that were most helpful for promoting understanding, and de-emphasising the features that were least helpful. Levis (2005) states that both the nativeness and intelligibility principle continue to influence English instruction in terms of how they relate to the context of English communication and the overall relationship of pronunciation to identity. What is ground breaking is the WE speaker-listener matrix. The emphasis of the speaker and listener matrix in WE communication is very useful in this setting as communicators are from various L1 backgrounds. In such settings, according to Low (2015, p. 129), the speaker should try to achieve intelligibility per the listener group, as such, the onus is on speaker to try to make him/herself intelligible to their listeners: listener - dominated. The definition and components of intelligibility should no longer be the main focus of EIL but rather who should one be intelligible to and for what purpose (p.143).

As aforementioned, in EIL it is believed that when using English in endonormative contexts, speakers require nothing more than comfort intelligibility (Abercrombie, 1949; Munro & Derwing, 1995a). An extreme stance of this position is that standard English does not exist (Kirkpatrick, 2002) and holds no place in the multilinguistic communicative community. The notion of ownership is continuously contested and due to the pluricentricity of English, Inner Circle countries can no longer hold custody over it (Widdowson, 1998). Several reformulations of the term English native speakers are used to avoid the sense of ownership of English such as English fluent users and English monolingual speakers. In summary, EIL does not believe that native-like pronunciation aids English communication in an international context and there is a large

body of work in the field which echoes such assertions (Smith and Rafiqzad, 1979; Smith, 1992; Kachru and Nelson, 2006). Evident in these works is the contention that, often, NSs of English are demonstrated as the least intelligible within NNS communication settings. Furthermore, this postulation regarding NSs draws attention back to the issue of accent and intelligibility, they are not bound to one another and a weaker accent does not necessarily result in the highest level of intelligibility (Munro & Derwing, 1995a). Exhibited throughout intelligibility studies where the listeners are NNSs, NSs pronunciation did not reveal itself as having a significant positive effect on intelligibility and the effect of accent familiarity was demonstrated as more dominant (Matsuda *et al*., 1999). However, regarding NNSs who do not share L1, it was suggested that listeners might find NSs pronunciation easier to comprehend than foreign accented speech that is not their L1 (Derwing, 2003; Jenkins, 2002). In addition, there are works reporting that for NS listeners, NS speech is easier to understand, Munro and Derwing (1995b) reported that NSs find NS speech more comprehensible than Mandarin accented speech. While those investigating Singaporean English and NS English intelligibility such as Date (2005), Gupta (2005), Kirkpatrick and Saunders (2005), and Setter (2005) all indicated that generally, English NSs found English NS speech easier to understand and Singaporean listeners found Singaporean accented English easier.

For the purposes of clarity and coherence it must be noted that the definition of native accent and weaker accent are not identical nor interchangeable. Native accent is operationally defined as the pronunciation of English by native speakers of English: those having English as their mother tongue (Wells, 1982). Weaker (foreign) accent, therefore, is a lower degree of foreign accent/ L1 accent in English speech pronunciation when English is not L1. This study suggests that a weaker accent can be conceptualised as a more native-like accent, in which nativeness can be varied through degree of how weak the accent is, as again, accent is a continuum phenomenon. To reiterate, weak accent is the lower degree of foreign accent in pronunciation or that which is more approximate to

native-speaker pronunciation. It might be true that an English native accent is not the facilitator for intelligibility when NNSs are the main communicators because NNSs tend to rely on their L1 (accent familiarity) when encountering L2 speech as mentioned. However, this scenario is not applicable when encountering a communicative setting where NNS listeners do not share the same L1 as the speaker. As such, the discussion falls on NNS communication in two different settings a) NNSs sharing L1 with the speaker and b) NNSs not sharing L1 with the speaker. The works mentioned above claim that a native-like accent cannot facilitate intelligibility when NNSs share L1 with the speakers. Undoubtedly, with the benefits of accent familiarity, they can understand more from L1 accented English; rather than English native-like pronunciation. The case is, however, completely different when the listeners are NNSs from a different L1 as the speaker; such as, Chinese accented English speech with an Arabic L1 listener. Under such circumstances, English native-like accent has higher intelligibility levels than the foreign accented English, as indicated in Munro and Derwing (1995a, 1995b) and their similar intelligibility works, that when encountering foreign accented speech, NNSs exhibit more problems with intelligibility when L2 speech is not their L1. Regarding this issue, it is suggested that a NS accent does not facilitate intelligibility when NNS listeners share L1 with the speaker. Alternatively, when communication takes place in a wider setting where NNS listeners do not share L1 with the speaker, weaker foreign accented speech or pronunciation that parallels the original English pronunciation is believed to facilitate intelligibility. In addition, the notion that a native-like accent aids or hinders intelligibility seems to be over-judging. Regardless, the listeners L1 must always be taken into consideration in order to achieve the highest levels of intelligibility. Unfortunately, to date, intelligibility research is saturated with studies regarding how foreign accented speech is intelligible for NSs and NNSs while the investigation of how NSs vs NNSs accented speech affects intelligibility of NNSs is inadequate. Among the few, the results are in line with the discussion above, that when NNS listeners do not share L1 with the speaker, a

native-like accent results in higher intelligibility. As a result, EIL scholars such as Spichtinger (2001), Seidlhofer (2004), and Scales, Winnerstorm, Richards, and Wu (2006), propose a reconceptualisation of EIL pedagogy, that instead of one single pronunciation model, there should be a focus on teaching the features of a variety of accents, whilst raising awareness of how pragmatic rules can differ across contexts. That is, local pronunciation, or endonormative standards, should be learnt as another form of appropriate English for local context communicative purposes. However, in communication with people from different L1's, endonormative features should be reduced to maintain international intelligibility. Rajadurai (2007) provided excellent insights into this issue. Through examination of past research into intelligibility, he suggested ways to advance the field of investigation, among other concerns, the role of the listeners was not listed as having as important a role as the speakers in accommodating their speech receptively and productively to their potential interlocutors in intercultural settings. This resonates with the listener-dominated norms of intelligibility proposed in this study which aimed to identify whether a weaker level of accent helped facilitate intelligibility and how it affected different L1 listeners.

2.7 Intelligibility Predictors

As cited widely in the literature, the role of belief exists in communication (Craig, 1999). To elucidate, while using language, language users expose their beliefs regarding the language in various ways such as attitudes towards the accent, the speakers, prestige, social and regional background, intelligence, personality traits, intelligibility of the language, and more. These factors can be explored in relation to language and communication and cross-studied as desired by researchers. For the current intelligibility study, three beliefs were adopted as potential predictors of intelligibility, which were, attitudes, familiarity to international accents of English, and perceived intelligibility.

Concerning attitudes, the challenging topic has gained growing interest from scholars in the field of EIL intelligibility researcher such as Smith (1983), Bhatt (2002), Tripasai (2004), and Jenkins (2007). A main contributor, Jenkins (2007) offers various interesting arguments regarding attitudes and identity in relation to accented English as well as proposing that native varieties of English are viewed in a more positive light than other ESL accents. Given that English has been extolled as the discourse of expertise, alongside the marginalisation of non-native varieties, this is hardly surprising. In addition to attitudes, familiarity to foreign accented speech is another challenging issue in the EIL field, originally studied by Gass and Varonis (1984) and continuously studied thereafter. Research has indicated that familiarity towards L2 speech contributes to the success of any communicative activity (Derwing & Munro, 2005). However, familiarity *per se* can be further classified into sub-categories such as familiarity to the word, to the topic, to accents in general, or to the particular accent studied. Familiarity in relation to intelligibility in this research was explored in the strand of familiarity to foreign accents in general as a predictor of a specific accented English intelligibility. Finally, perceived intelligibility, commonly referred to as perceived comprehensibility was investigated for its potential correlation with actual intelligibility.

2.7.1 Attitudes

In communication, upon perceiving an utterance, the listeners analyse and evaluate cues which in turn can affect their attitudes towards the speakers (Pawlak & Szpyra-Kozlowska, 2010). The role of speech in listener attitude formation towards a speaker is more prevalent in situations where the speaker is unseen and the only cues the listener has come from acoustic signals, which can result in a judgement based on stereotypes. Wells (1982) further postulated that when communication takes place over the telephone, the speech of the speaker serves as the ground for forming the attitudes of the listener regarding their beauty or handsomeness, intelligence or honesty. The language and attitude studies conducted over the past decade allude to the dominance in the formation of

attitudes on the basis of other people's accent, especially when the speech is the listener's first language (Balogh, 2008).

The issue of accent consciousness appears to be connected to attitudes on many grounds, that is, the language form a person adopts which reveals them in terms of elegance, politeness, pleasantness, etc. In general, the language we use relates to our social class and even our national identity. Urban dialectology commonly connects with social stratification, and it is easier to identify regional origins from the speech as social status declines as regional dialects come to be associated with low levels of occupation and education (Hughes *et al.*, 2013). Most people tend to associate accents of English with different English speaking areas. When we come to consider regionally differentiated varieties of English, we also confront the issue of dialect. The differences between accent and dialect seem relatively simple to describe: accent consists of pronunciation while dialect consists of grammar, words and their meaning, and pronunciation, with isogloss allowing for exploration of regional boundaries of different dialects. However, the case of social accent is more subjective and complicated, and the belief surrounding regional dialect as belonging to an inferior social class is stronger in the USA than in the UK (Loury, Modood & Teles, 2005). Wolff (1959, as cited in Jenkins 2007) asserts that perception of an accent relies not only on intelligibility but also needs to be considered in tandem with language attitudes. Wolff (1959, as cited in Jenkins 2007) hypothesised that there were factors beyond the implication of phonology in the perception of accent. Jenkins (2000) strongly advocates that the link between accent and attitudes does exist and one of the crucial factors affecting intelligibility is "attitudes towards L2 errors". Negative attitudes towards L2 accents are frequently displayed, especially in English language teaching professions and from pronunciation experts. More significantly, it is noted that to claim that the utterances are dialects or considered a different language depends entirely on the attitudes of the listeners (Gorlach, 1999). As highlighted, there are numerous aspects of language bound up with attitudes, and it is unavoidable to use language without a sense

of superiority and inferiority norms. As with most languages across the globe, there are standard and dialectical varieties.

Standard English is associated with education, institutions and a higher societal class. Non-standard English is usually associated with communication between family and friends, home, and neighbourhood. The way people speak, along with other social codes, such as how they dress or behave are amalgamated with social identity which directly impacts the formation of others views of who the speaker is. The most conspicuous stratum of one's language is an accent and its importance as a label of identity is apparent as the aspect of an individual's speech that most frequently undergoes a change (Marx, 2002). The aim of this change may be to disguise membership of or to create distance from a particular social or regional group or to align closer to another group the person wants to belong. On the contrary, as per accommodation theory distance from the linguistic norms of one group may indicate very clearly that someone does not belong. This is the essence of accommodation theory - a communication theory to account for the relationship between speaker attitudes and linguistic variables, which refers to the means individuals take to adjust their way of interacting with speakers of different cultural backgrounds including language, so as to facilitate communication (Thanasoulas, 1999). However, it can be argued that if the use of language is connected to an abstract concept then it depends on an individual's subjective appraisal and thus any language used such as style, dialect, form, accent, convergence and divergence cannot be judged as merely right or wrong. In the field of attitudinal studies, the term accent is applied as a synonym for a pattern of pronunciation (Wells 1982; Balogh, 2008). Unfortunately, the amount of research on non-native speaker attitudes towards second or foreign language accents and speakers has been quite limited. There is a general assumption in the literature regarding the belief that when we perceive somebody speaking with an accent that is a variety of our native language, we are frequently able to identify the accent as well as certain traits of the speaker (Marx, 2002). However, whether the same process is employed when we perceive

accent varieties that do not belong to our native, but to a second or foreign language, is still dubious.

Another significant theory on language and attitude formation is that of social connotation hypothesis which was developed by Trudgill and Giles (1978) and examines the influence of social connotations such as, politics, economics, cultures, and personal experience on the formation of attitudes over linguistic elements. On the contrary, Boets and De Chutter (1977) argue that attitudes are in fact based solely on linguistic issues (intelligibility of the target language to the speaker) with their research results indicating that intelligibility scores and attitudes demonstrated a weak but positive correlation. Consequently, a thorough investigation into the relationship between the two factors is highly desirable.

The review of language and attitude research highlighted that most common measurement method used was impressionistic questionnaires, as they were predominantly designed for naïve listeners who were unfamiliar with phonetic terminology. More specifically to intelligibility, the aim of exploring attitudes as an indicator of intelligibility was based on the assumption that negative attitudes towards non-standard speaker accents exist. Negative attitudes are not considered exclusive to NSs but are held among NNSs themselves. For example, Lindemann's (2005) study of different English varieties and attitudes revealed that the most salient non-native speech appeared to be negatively evaluated and East Asian English was even stigmatised. Walt (2000) demonstrated that NSs of English held more positive attitudes towards L1 accented English than English NNSs. Huspek (1986) investigated the relationship between attitudes and standard and non-standard English varieties, and found that there was an interaction between attitudes and accent. Often NNSs accents are viewed as difficult to understand and discriminated against in favour of a NS accent, demonstrated in the work of Derwing, Rossiter, and Munro (2002) and Lippi-Green (1997). However, due to the previous decades theoretical and methodological frameworks being grounded in a monolingual ideology there has been

minimal research regarding attitudes towards English as a lingua franca, which leads to the false impression that standard varieties are superior and lingua franca accented is inferior. Jenkins (2007) highlighted that such research must measure the perception of accent based on intelligibility because it is believed that the two are connected and cannot be divorced from each other - they are symbiotically linked. In addition, there are very few works investigating the interaction between attitudes and intelligibility while there is an abundance of research examining the relationship between accent and attitudes as previously discussed. Among the few, Kirkpatrick and Saunders (2005) asked Australian university students to listen to one-minute recordings of both Australian and Singaporean speakers then answer open-ended questions about whether they liked and thought the speaker was intelligent. The results indicated that the attitudes of the listeners were tied up with the content of the speech (more academic and more serious content was rated as more intelligent) rather than the accent. Peng and Brown (2002) examined the intelligibility of RP and Singaporean English in relation to the attitudes of the listeners. The results indicated that RP was rated both more intelligible and more refined than Singaporean English. These investigations are examples of studies demonstrating that attitudes and intelligibility are related in some contexts, this issue is further highlighted by confounding results across research. On one hand, it was found that intelligibility and attitudes were correlated such as Giles and Niedzielski (1998) and Patel and Roden (2008) while other research indicated that the relationship between the two was ambiguous such as Hilton, Goosken, and Schilippert (2013) and Tan and Castelli (2013). As such, more research on this issue is required to conclusively determine the function of the relationship.

The matched guise technique (Lambert, Hodgson, Gardner & S.Fillenbaum, 1960) was revealed as the most common method employed for measuring attitudes towards a language. The questionnaire was developed as an indirect method for assessing how individuals evaluate social groups based on their linguistic varieties. It is considered

indirect because respondents are led to believe they are rating people rather than language. In other words, while rating two or more samples of speech which differ in only one qualification such as accent, the raters are guided to rate the speakers' personal traits such as height, intelligence, poverty, friendliness, etc., without realising that in fact, these speeches are uttered by the same speaker. The use of indirect methods reduces listener awareness of the research aims, allowing for a true reflection of listener attitudes, positive or negative, towards the tested linguistic unit to be collected. However, a limitation of the matched guise technique relates to the complexity in construction of speech samples as they must be spoken by the same speaker with exactly the same linguistic elements; the length of speech, rate, pause, fillers, and so on with the exception of the variable to be tested. Nevertheless, this technique pioneered and informed attitude surveys until present. The use of attitude surveys has resulted in numerous different items being tested, for example, when Jenkins (2007) measured attitudes towards ELF, the items to be rated were correctness, acceptance, pleasantness, and familiarity while the original version of the matched guise technique used height, good looks, leadership, sense of humour, intelligence, religiousness, self-confidence, dependability, entertainingness, kindness, ambition, sociability, character, and likability.

2.7.2 Familiarity to International Accents of English

In native and non-native speaker discourse, lack of intelligibility is often identified as one of the main hindrances of effective communication. Many empirical investigations have attempted to identify the variables which determine level of intelligibility, with discourse, and familiarity of the listener to the speaker's accent established as contributing variables. Accent familiarity, though far less researched than attitudes, is another interesting issue to explore for its predictability in intelligibility. In linguistics, familiarity is the measurement of how a linguistic unit is thought to be used or the degree to which it is known and is generally measured using a rating scale with

structures such as, never, sometimes, or often (Richards & Schmidt, 2002). Regarding accent intelligibility, familiarity is researched from two main perspectives; familiarity to foreign accent in general, and familiarity to the particular accent being tested. According to the literature, familiarity is considered a facilitator for accented speech comprehension. That is, apart from listener's L1 background, responses to an utterance might vary due to familiarity with the accent, which can further be categorised into several features as familiarity to specific foreign accents, to particular speakers, or to accents in general. Gass and Varonis (1984) found that familiarity to accented speech in general and with a particular accent all have a positive effect on intelligibility. Derwing and Munro (1997) echoed this claim that familiarity to accented speech, in general, helps facilitate listeners understanding of L2 accented speech. Together with the claims previously mentioned of the benefits of shared L1 on accent familiarity on L2 intelligibility, it is evident that familiarity to the particular accent tested positively affected intelligibility. However, this is not the focus of the present research, as when considering communication within an EIL setting there are numerous different accents and speakers come from various backgrounds. Therefore it was deemed more appropriate to examine the effect of familiarity to foreign accents in general as a predictor of a particular L2 speech for international intelligibility. Derwing *et al.* (2002), cited that students who had more exposure to international teaching assistants had better comprehension of the foreign-accented speech tested (Chinese) than students who had less exposure and concluded that there was a positive effect of accent familiarity in general for intelligibility of foreign-accented speech. Results show that exposure to different accents equipped the students with the skills to process accented speech more effectively. However, the claim that familiarity to general foreign accents can positively affect the intelligibility of particular accents is still challenged in the literature and worth further examination. A critical issue of concern is that familiarity with a given accent does not necessarily denote equivalent experiences with the various sociolects associated with that accent.

2.7.3 Perceived Intelligibility

In the realm of intelligibility measurement, comprehensibility is frequently interchanged with the term perceived comprehensibility and perceived intelligibility. It is a scalar judgment of how easy or difficult it is to recognise the speech as the targeted language. Perceived intelligibility is normally measured with rating methods while intelligibility scores are obtained through direct tests (Derwing & Munro, 1997, 2001b; Munro & Derwing, 1995a). Rating methods lack experimental control, as regardless of the actual level of comprehension of the tested speech, the raters can take other factors into account when rating, such as time consumed and difficulties encountered. Therefore, it is possible for a fully intelligible speech, which was difficult to understand, to receive a low perceived intelligibility rating. In other words, although the L2 speech is intelligible, processing may require multiple attempts and require additional effort. Munro and Derwing (1995a) found that perceived intelligibility and intelligibility scores were more strongly correlated than intelligibility scores to accent: accent was a poorer reflection of the intelligibility scores than perceived intelligibility. On the contrary, Lu (2007) found that perceived intelligibility and actual intelligibility were negatively correlated. Brown (1995, p. 232) suggests a very interesting link between actual intelligibility and perceived intelligibility, that while listening to the speech, the listeners must sense that there is "adequate communication" to achieve intelligibility. If there are shared linguistic items, then a structure of mutual beliefs will be established under the presumption of playing the same game. Beinhoff (2014) studied how German and Spanish learners of English at different proficiency levels perceived accentedness and intelligibility of Spanish accented English and German accented English. She found that familiarity, whilst an important factor in how listeners perceived and rated intelligibility, may not necessarily have a strong influence on actual comprehensibility. Accentedness rating is also influenced by accent familiarity. However, actual comprehensibility and intelligibility demonstrates a weaker relationship to accent and familiarity ratings. In subjectively judging accented utterances,

Munro *et al.* (2006) comments that listeners can choose to downgrade, ignore, or pay little attention to the accent of the L2 speaker (p.19). This indicates that when listeners constrain their subjective assessment towards accented speech, they are able to rate it on a more objective basis. Kim (2008) reported that there was no statistically significant correlation between subjective and objective judgments. However, within the frame of subjective judgment itself, a stronger level of accent was perceived as more difficult to understand, but actual intelligibility was not correlated with ratings. Therefore, the results support Munro and Derwing (1995a), that accent ratings are poor indicators of the actual understanding of an utterance. The question to be raised here might not be on accent and comprehension, but subjective judgments (rating method) and objective judgments.

2.8 Issues and Trends in Intelligibility Research

Kennedy and Trofimovich (2010) points out that the ultimate aim of pronunciation instruction is to prepare learners for interactive spontaneous extended L2 communication in a given context. However, according to the literature the majority of research has investigated intelligibility via the recognition of isolated words or sentences and not the listeners' understanding of the speakers' contextualised and extended speech (p.132-133). As a result, it is not clear whether the intelligibility of words reflects, and can be generalised to the intelligibility of extended speech in context. The measurements of oral proficiency in isolated words, and sentence level, target the accuracy, complexity, and fluency of the learners' language but often give little information about the effectiveness of the learners' communicative ability with interlocutors in an authentic setting (Miller *et al.*, 1951). Therefore, it is important to look at the elements of learners' communicative ability and thus of their proficiency. A salient feature of communicative ability is the extent to which a learner's production is understood by a listener in an authentic setting, what is referred to as intelligibility. It was suggested that the development of an intelligibility measure for extended naturalistic speech using narrative speech samples is a step towards intelligibility research which acknowledges and values features of authentic L2

communication (Rajadurai, 2007, 2016; Szczepek Reed, 2010b). Hence, intelligibility studies which employ the use of extended naturalistic speech samples, NNS listeners and interactive tasks can provide more insight as to the concept of international communicative competence. This may pose more difficulties for the researcher in designing their research, as more consideration must be given to factors such as length of speech, topic used and transcription methods, it is by no means impossible.

Generally, researching speech can be conducted from a wide range of approaches, from qualitative to quantitative (Hughes & Szczepek Reed, 2016). Principally, intelligibility measurement is a form of language assessment with an emphasis on competency over the traditional assessments based on accuracy, fluency and proficiency. Thus, similar to general language testing and assessment, the two main concerns regarding testing methods are *test usefulness*: reliability, validity, authenticity, interactiveness, impact, and practicality, and *test specification*: purpose of the test, description of the test, language level, language skills, time consumed, and text feature (Bachman & Palmer, 1996). These issues were considered when designing the intelligibility measurement method of this study and all relevant details concerning the issues are explored as follows.

2.8.1 Types of Intelligibility Tests

Regarding the instruments chosen for intelligibility measurement, there is still no universally accepted way of assessing intelligibility (Munro & Derwing, 1995a). Moreover, among the existing works investigating intelligibility, various methods have been employed. For instance, Lane (1963) measured intelligibility by counting the total numbers of words listeners transcribed correctly, Broadkey (1972) used paraphrasing, and Smith and Rafiqzad (1979) used cloze tests. Furthermore, Smith and Bisazza (1982) employed picture selection in response to a stimulus, Anderson-Hsieh and Koehler's (1988) research consisted of comprehension questions whereas Barefoot, Bochner, Johnson, and von Eigen (1993) counted percentages of key words recognised. Munro and Derwing (1995a) asked participants to determine truth value, Fayer and Krasinski (1987),

Win (1998) and Lu (2007) asked listeners to directly rate intelligibility on a questionnaire using a Likert scale. Each of the approaches mentioned has strengths and limitations. Smith and Kachru (2008) reported that to check the intelligibility of an utterance, one could simply be asked to repeat the utterance or to write it as dictation. It is stated that the transcription method provides a more accurate measure of speech intelligibility than the rating scale method (Samar & Metz 1988; Derwing & Munro, 1997), and measuring intelligibility through observation may conceal several underlying error processes (Derwing & Munro, 2005).

The question of which method to employ is considered a result of the purposes of the research. To elucidate, paraphrasing is considered a comprehensibility measurement, whereas questionnaire ratings are for perceived intelligibility testing, and transcription is for pronunciation intelligibility. In addition to the method chosen, the qualifications of the task itself also need to be considered. Nejjari *et al*. (2012) indicated that one strength of transcription relates to the inability of listeners to visually interact with the speakers and thus without non-verbal clues phonological intelligibility can be measured more reliably. The nature of transcription tasks is discussed further in the next section, but generally, in order to investigate the extent to which speaker pronunciation can be acoustically perceived by the listeners, the clues involved such as test clues and non-verbal clues such as gestures and eye contact between speech producer and receptor should be eliminated where possible. Though it is not an authentic speech communication setting, where people interact with each other in person, such interaction was excluded from the current intelligibility research as the main focus related to phonological intelligibility. The experimental control gained through the use of transcription allows for a higher level of validity to be claimed. Had the researchers used speech produced in an authentic setting it would not be clear if the effects shown on intelligibility were due to pronunciation, the effect of non-verbal gestures or other possible clues.

Regarding the current intelligibility research, the transcription task was considered the most direct and reliable method to investigate intelligibility that was specific to phonology, and where semantic and pragmatic functions were not involved. From the review of literature into EIL intelligibility and the methods used, it is clear that any works using a transcription task to measure intelligibility were measuring phonological intelligibility, and the use of transcription tasks has become a widely-accepted approach in research of this type (Munro & Derwing, 1995a; Derwing & Munro, 1997, 2001b). Furthermore, Nejjari *et al.* (2012) asserts that a good intelligibility task is one that provides a minimal number of clues. That is, the test takers cannot perceive any additional clues from the test or interaction with the speaker. In addition, Clark, Yallop, and Fletcher (2007) discovered that intelligibility tests that consist of many predictable contexts, or have the format of matching or multiple choice, produced higher intelligibility scores than those requiring the listeners to report with no options for a correct answer. In multiple choice tests and dictation, for instance, clues are always provided and predictability can come from the neighbouring words or the content provided. However, during the transcription task, plain paper was given to the test takers, which forced them to rely on their acoustic perception of the speech samples only as there were no clues or hints provided in the testing paper.

Hawley (1977, p. 166) suggests that the characteristics of a good speech intelligibility test are a) it has wide range of difficulties to make it suitable to a wide range of situations, b) is appropriate for use by all groups of subjects and free from learning effects, c) is sensitive to all the factors that affect intelligibility, d) is easy and quick to administer, analyse, and interpret, e) is readily repeatable in the same situation and readily replicable in others, and f) provides results that can be seen to be closely related to the performance of the system, building, person, or procedure that is being evaluated. However, he specified that to date no intelligibility tests meet all of these parameters and hence further research and development are required, and compensations must be made for

the limitations of existing tests. To conduct valid research it is suggested that data should be collected from communities with whom L2 speakers interact with, and a wide range of methods implemented to collect responses.

To fully investigate intelligibility measures it is necessary to examine the parallel field of study as psycholinguistics in the sub-issue of speech recognition – how speech sounds are recognised. In speech synthesis, Egan (1977) proposed three sub-types of testing methods that can reveal factors influencing degree of intelligibility of speech. They are articulation tests, subjective appraisal, and threshold methods. The articulation test requires the speaker to pronounce selected speech items and the listener to write down the word heard, consideration in this case must be given to the time and effort of the listener in listening and writing down the speech. The scores are tabulated based on the number of test items accurately transcribed by the listeners. Regarding subjective appraisal, in this test, the listeners are asked to evaluate the overall quality of the speech rather than determining discrete items as words, phrases, or sentences. There are two methods included in this subjective appraisal which are *ranked order* and the *rating scale method*. For ranked order, the listener is asked to simply judge which of two or more speech samples is more intelligible for them, whereas the rating scale method requires the listeners to use a scale (i.e. very poor to excellent) to rate the sample speech for level of intelligibility along a continuum. Finally, threshold methods are used to elicit the condition under which the speech sample is detectable or intelligible and includes three sub-types of tests; namely, threshold of audibility (intensity of speech), threshold of perceptibility (loudness of speech), and threshold of intelligibility (ability to understand the speech without using effort in perceiving the meaning of almost every phrase of the connected discourse heard). According to Egan (1948), these three methods can evaluate the factors that impact degree of speech intelligibility. From the literature review, it is evinced that actual intelligibility can be reflected via other channels of intelligibility measurement as well. In addition to measuring actual intelligibility by means of an

articulation test, commonly, orthographic transcription within the EIL context, the overall quality of speech tested, as judged by the threshold of intelligibility; that is how easy or difficult it is to understand the message and so-called perceived intelligibility, measured using a rating scale method was also identified as requiring critical investigation as the predictor of actual intelligibility in this paper.

Hawley (1977, p. 166) advocates scoring based on correct responses, written or verbal to speech stimuli-sounds, nonsense syllabus, monosyllabic words, spondees, phrases, and sentences as well as measuring the confidence of the listeners in their responses.   Nonetheless, according to Holmes and Holmes (2001), no matter how far the technology of speech synthesis goes, level of speech intelligibility still should be measured by human or even linguistic experts rather than computer processing and via a qualitative manner rather than quantitative one.

2.8.2 Transcription Task

From examination of relevant works in this field, speech transcription evaluation was accepted as the most frequently employed task for testing speech intelligibility and was first brought to the fore in the late 1980's through research on Air Travel Information System Task (Holmes & Holmes, 2001). The task involved recognising and responding to spontaneous speech in airline tasks such as "*List the flight from Boston to Dallas*" or "*Is lunch served on that flight?*" Hawley (1977) also reported the most common and accepted method of testing speech intelligibility was the American Standard Method for Measurement of Monosyllabic Word Intelligibility. This method required listeners to write down key words perceived from speech transmitted by a communication system.   The results were processed in the form of percentage of the test words correctly communicated. Up to this point of the paper, together with consideration of the purposes and questions of the research, that phonological intelligibility was the main focus, there was no doubt that the transcription task was the most appropriate measurement to serve those objectives. Therefore, further discussion of the transcription task is warranted.

In linguistics, transcription is the use of symbols to represent sounds or sound sequences in writing (Richards & Schmidt, 2002). There are different symbols at disposal for transcription but one of the most common is the International Phonetic Alphabet (IPA) which was created in 1888 by the International Alphabetic Association to solve the issue regarding the inconsistent relationship between the letters and sounds in languages under two main principles, every sound must have one symbol and vice versa, and there must be enough symbols to represent every speech sound in every human language. Consequently, there is one to one correspondence between each individual sound and symbol (Timyam, 2010). Cruttenden (2001) proposed that the transcription of the utterances will naturally differ according to the aim, such as to indicate sound values and to include a considerable amount of information concerning our knowledge of articulatory activity or our auditory perception of allophonic features such as IPA, while phonemic transcription indicates how a phoneme is realised in different positions. One important factor is that the use of IPA is not common and is restricted to users from a phonetics background due to its construction of special symbols and diacritics.

Phonetic transcription falls into two main categories; **Broad Transcription** (*Phonemic Transcription*) and **Narrow Transcription** (*Phonetic Transcription*). The former is the mental representation of sounds in the language of the speaker which holds all and only distinctive phonemes in the words being transcribed. Then, with the phonemic representation of sounds of the word in mind, the speaker needs to apply phonological rules such as assimilation, dissimilation, insertion, deletion, etc. that govern each individual sound in its specific position in a word. Following the application of phonemic transcription, we get the latter type of transcription, phonetic transcription, as examples shown in Table 2.3.

Table 2.3

Examples of Phonemic and Phonetic Transcriptions

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Word	Phonemic Transcription	Apply Rules	Phonetic Transcription
John's	/dʒɔns/	Assimilation	[dʒɔnz]
dented	/dɛntd/	Insertion	[dɛntəd]
victory	/vɪktərɪ/	Deletion	[vɪktrɪ]

Aside from the general and common types of transcription mentioned above, there are indeed various sub-types of transcription under the umbrella of phonetic transcription, as a matter of fact, transcription is not merely writing down whatever is acoustically perceived. The purpose for opting for transcription must be considered when designing and performing transcription tasks. Heselwood (2013) also indicates that transcription of an utterance is variable according to the purposes of the transcriber. To aid understanding regarding the nature and types of transcription, an account of the various types of transcription, from Heselwood (2013), are provided as follows.

2.8.2.1 Specific and generic transcription. This type of transcription is used to analyse the utterance in the specific instance of pronunciation, at the particular time and place of the speaker. It is conducted through direct contact with the real pronunciation of the speaker, where the phonetician will look at the reality of the pronunciation of the speaker.

2.8.2.2 Orientation transcription. As indicated by the term, it aims to either represent what the speaker does or what the listener perceives. Typically, it expresses an analysis of what speech sounds are likely to be in the view of the trained phonetician. This type of transcription is often used as a clinical instrument to improve the speaking ability of people with speech disorders.

2.8.2.3 Systematic and impressionistic transcription. Systematic transcription is transcription that is completed based on the knowledge of phonological systems, while impressionistic transcription is conducted based on the transcriber's personal sense-impression. That is, what the transcriber thinks it is useful to represent.

2.8.2.4 Generic phonetic transcription. When the transcription is not to represent actual utterances, or related to phonological systems, such as nonsense words, the transcription is referred to as generic transcription. The transcription obtained here is not to represent an analysis of any data but only to be potential data.

2.8.2.5 Morphophonemic transcription. The aim of morphophonemic transcription is to represent a morpheme by using a phoneme symbol that is linked with one of its regular alternants. It is connected to a single invariant form for a single item of grammar.

2.8.2.6 Exclusive and inclusive transcription. This type of transcription is used to express ideas regarding the representation of pronunciation of words when many variant pronunciations exist, such as in World Englishes where no single accent of English has been selected as the model. Here, the transcription is exclusive when there is only one single variant presented and it is inclusive when there are variant pronunciations in any language variety or in any speaker.

2.8.2.7 Dynamic transcription. This type of transcription gives an account of the articulatory domain by denoting the changing relationships of the speech organs during speech production.

2.8.2.8 Spelling pronunciation. Unlike all previous types of transcription mentioned that employ IPA as the tool for transcribing, spelling pronunciation is the use of alphabet or orthography to transcribe how the utterance is pronounced regardless of the phonetic analysis of the spoken form. Moreover, in this type of transcription, it is crucial that the transcriber recognises the words and knows how to spell them.

2.8.2.9 Pseudo-transcription. This sub-type of spelling pronunciation is called pseudo- or proto- transcription. It is the use of orthography for transcription, but only when the transcriber does not have knowledge of the written form of the word and transcribes it based on its pronunciation by using alphabetic symbols. While performing this type of transcription, one is not performing orthographic transcription but pseudo-

transcription using orthographic resources as a pseudo notation (Heslingwood, 2013, p. 32).

As illustrated, there is a great deal of diversity in transcription methods and the chosen form is often varied through the purpose of the transcribers. In general, besides spelling pronunciation, most require skillful trained phoneticians and utilise IPA which is not common knowledge for general language learners and users. Subsequently, there is an attempt to avoid the use of non-alphabetic symbols and diacritics in transcribing sounds especially for language users who are unfamiliar with IPA, novice language learners, or those who are more comfortable in dealing with pronunciation by common orthography. As a result, the **Pronunciation Respelling System** was developed, now commonly used in newspapers, non-technical writing, and children's dictionaries. In the English language, the pronunciation respelling system can be found in the many sources; for example, Americanist Phonetic Notation (APN), BBC Phonetic Respelling, The Chamber Dictionary, Scholastic Dictionary, etc. This method of transcription is also commonly referred to as **Simplified Transcription** as it aids the process of transcription by simplifying and is more readily understood by general users thus negating the use of transcription solely by those with IPA knowledge. Furthermore, as a specific set of alphabetic symbols are used to represent sounds in this kind of transcription it is very convenient and more accessible to language learners and children.

2.8.3 Type of Speech in Intelligibility Test

In reference to sound elicitation in the speech to be tested for intelligibility, Major (2001) claims that wordlists, with a focus on "form" rather than "content", can elicit the most accurate pronunciation from the speakers because the informants can pay maximal attention to their pronunciation and is the most suitable form of speech in intelligibility measurement. He added that in L1 and L2 acquisition, learners generally approximate the target language with greater accuracy with increasing formality (p.63). However, it is strongly argued by this paper that careful speech, such as wordlists, are not considered

satisfactory speech samples for measuring intelligibility when consideration is given to phonological transfer, deviations and errors that are reduced when the speech is more formal and cautious, thus, reducing the authenticity of the speech. Weinberger (1987, as cited in Jenkins, 2000, p. 117) also postulated that syllable simplification will decrease as task formality is increased. The classic sociolinguistics work of Labov (1964) who explored social stratification in the pronunciation of [r] in New York City also revealed that when pronouncing speech, with the exception of social class of the speakers, with higher levels of caution and awareness, [r] is more significantly pronounced. In addition, he also noted that awareness and style in pronunciation is varied through type of pronunciation, as careful speech, reading passage, word list and minimal pairs. Hence, in order to evaluate pronunciation in a more authentic setting, it is impossible to use heavily controlled methods that trigger greater awareness in the speaker, such as reading isolated words or designed passages and especially so in a sound recording laboratory (Jenkins, 2007). Rather the process must be conducted in an authentic setting to keep the speakers awareness of their pronunciation to a minimum (Szczepek Reed, 2010b). As pointed out by Jenkins (2007), the use of isolated words or designed sentences is unrealistic to authentic communication, the results of which can hardly be transferred to communication in authentic settings. To elucidate, when words are produced in isolation, it is known as citation form. In connected speech, however, vowel and consonant segments can have different phonetic realisations compared to when they are uttered as part of a word in citation form. In connected speech they undergo a process where reduction and articulatory simplification are found because of the need to speak faster. The factors that can affect connected speech are, speed of the utterances and accent of the language (Low, 2015). In addition, the process of isolated word speech construction is conducted in a sound recording laboratory where the speaker is fully aware of their pronunciation, resulting in a lack of ecological validity and where there is doubt regarding whether or not it is their real communicative production in an authentic situation. Again, this substantiates

the points mentioned above in EIL intelligibility, that measuring connected speech is considered more beneficial than isolated words especially in the context of authentic communication.

2.8.4 Topic of the Speech in Intelligibility Test

In testing intelligibility, it is unavoidable to look at the topic of speech intelligibility. To elaborate, a person's ability to perceive and understand speech largely depends on the structure of their ears (auditory organs and functions), brain processing (cognition, decoding and encoding process), acoustic structure of the speech (intensity, loudness, segmental and suprasegmental features, etc), the context (semantics, pragmatic, locutionary and illocutionary meaning), familiarity with the speaker, and expectation as the listener (Clark *et al*., 2007). However, the main issue encountered when measuring speech intelligibility is that people tend to be able to determine and predict the phonological structure of the recognised speech even if they do not hear it clearly. For example, in the sentence "*The baker burned the bread*.", the word bread is predictable from the context; regardless of how clearly it is pronounced, and would rarely be confused with the other similar sounding words as bed, pet, or bet. Holmes and Holmes (2001) also endorse this view by stating that due to the auditory and cognitive ability of humans, they can quickly decipher whether the speech is from a language they know or not, additionally, they are sensitive to the differences between languages without necessarily speaking the language. They are also equipped with the skills to deduce the characteristics of sound patterns in the speech they hear. Hence, it is suggested that in testing speech intelligibility, the tasks administered are required to deal with the identification of nonsense words such as dar, oosh or clur, rather than meaningful and recognisable words. The use of nonsense syllables as mentioned is advantageous as it can reveal a more accurate level of intelligibility to the speech pronounced (Egan, 1977). Arguably, in EIL intelligibility testing, the setting might be slightly different from the arena of speech synthesis where the aim is to see how speech produced by a machine is understood by humans and vice versa.

In EIL, the aim of intelligibility testing is the interaction among humans which focuses on the authentic context of communication. Hence, this current research argues that nonsense words, as suggested in speech synthesis research but which do not exist in the speech sounds of the tested language, should be eliminated.

Furthermore, the type of spontaneous speech used in speech intelligibility tests can be classified into two main types, namely *text dependent,* that the text to be spoken is known by or in the familiar field of the listener, and *text independent,* that the listener does not know or have any clues about the topics and words in the speech to be tested (Holmes & Holmes, 2001). Though some EIL scholars such as Kirkpatrick *et al*. (2008), Pongpairat (2011), and Walt (2000) used as general and vague a topic as possible for intelligibility measurement to avoid any confusion of words that might occur, it is supposed that to elicit the phonological features affecting intelligibility the speech samples should have as narrow a topic as possible to avoid the chances of predictability and context guessing. Topics such as talking about vacations and self-introductions are considered too predictable in content and pose difficulty for ascertaining whether accuracy in transcription was resulted by phonological intelligibility or a consequence of guessing from context clues. Hawley (1977) asserts that the characteristics of a good speech intelligibility test should have some level of difficulty to reduce the ease with which content can be predicted.

2.9 Systemic Review of Thai-Accented English Phonology

2.9.1 Background and Status of English in Thailand

The historical basis of English in Thailand was borne as a response to the threat of colonisation. The willing adoption as a political tool to protect the Thai sovereignty reflects that Thailand is an example of the linguistic phenomenon of using the English language to serve her own sociolinguistic will, contexts, and functions. The first contact with English in Thailand or Siam (the former name of Thailand) was witnessed in the reign of King Nang Klaw (King Rama the 3rd: 1824-1854) when American missionaries were

assigned to teach the language to young royal children (Aksornkool, 1980) as illustrated by the famous story of "Anna and the King of Siam" (Landon, 1944). Later, during the reign of King Mongkut (King Rama the 4th:1851-1868), the tremendous adversity of not knowing English - the language of the invader, was apparent (Masavisut, Sukwiwat & Wongmontha, 1986). With growing concern regarding the increasing colonial presence and the changes it brought, English was introduced to the royal palace. English was initially restricted to royal family members and elite groups of Siam, but was gradually disseminated and became accessible to middle-class Thais in the reign of King Vajiravudh (King Rama the 6th: 1910-1925) (Masavisut *et al*., 1986). Foley (2005) discussed the modern use of English in Thailand, "The paradigm has shifted and Thais are using English mainly with other non-native speakers of English, and only to a lesser extent with native speakers" (p. 6). In recent decades, used as a foreign language, English has become increasingly crucial both in local and global contexts. It is the language of Thailand abroad and has become a symbol of modernity (Huebner, 2006).

2.9.2 Thai-Accented English Phonology

It is evident that most of the EIL phonology studies explore the major accents of the world such as Singaporean English, Indian English, and African English. However, the systematic and high-quality study of Thai-accented English has received little to no attention in the literature and justification for its low representation can be attributed to the fact that English use within Thailand is limited and has not been classified as an identifiable variety of English. The ever-increasing presence of English in Thailand and its potential for development requires a critical examination of it's intra-function role. Currently there are a limited number of studies which focus on such aspects (e.g. Buriphakdi, 2008; Goddard, 2005; Huebner, 2006; Masavisut *et al*. 1986; Watkhaolarm, 2005).

There is a substantial deficit in Thai-accented English pronunciation research (Trakulkasemsuk, 2012). If Thailand wants to participate in the growing global economy,

the use of English can no longer be considered a luxury but a necessity (Foley, 2005) and as such requires critical examination in literature. Early work was conducted as a PhD thesis by Kruatrachue (1960), the more updated version can be found in Smyth (1987) as a chapter of the book. With exception to the two main references on Thai English phonology works noted, reports on Thai English pronunciation have been sporadically scattered throughout academic journals and presentations. In general, the works existing illustrate that the inexistence of English fricative sounds, voicing quality and final consonant clusters are considered problematic issues in Thai English pronunciation. Nevertheless, there is a requirement for the detailed phonology of Thai-accented English to be systematically explored by initially looking at the sound system of each language followed by the synthesis of Thai-accented English. To address this concern, the remainder of this chapter is devoted to a systemic review of Thai-accented English phonology. The Thai-Accented English Phonology section of the chapter itself is considered a pragmatic and pertinent systematic review of Thai-accented English phonology being launched and filed to field. The content here is analysed and synthesised via a review of literature relevant to Thai and English phonology and finally it provides the characteristics of Thai-accented English that can be utilised as a reference point by future researchers aiming to explore Thai-accented English in various angles.

As Thailand is a part of the ASEAN mainland, the languages of the continent are predominantly governed by three major language families: Austro-Asiatic (Khmer, and Vietnamese), Tai Kadai (Thai and Lao), and Tibeto-Burman (Burmese). As such, the significant linguistic characteristics shared among each family can be reported as; monosyllabic (with some exceptions), lexical tone (except Khmer), large inventory of consonants, very limited in consonant clusters, and syllable-timed. In addition, among consonants in the languages of this region, voicing quality is not a distinctive feature but rather aspiration; i.e. there are often two series of stops: aspirated versus unaspirated. Different from Thai and every language in mainland ASEAN which are tonal, non-

reflected, predominantly monosyllabic languages with non-reflexive, and non-alphabetic orthography, English is an alphabetic, reflexive, disyllabic, and non-tonal language. Segmental and suprasegmental features of both Thai and English are explored and thoroughly presented as follows.

      2.9.2.1 Segmental Features. Regarding Thai and Lao, the two languages of the region that are governed by the Tai Kadai language family, as a general rule, each syllable consists of an initial consonant or consonant cluster followed by a vowel or vowel cluster, which can then be followed by a final consonant, usually a nasal sound or unreleased stop. More specifically to Thai phonotactics, not only is there no final consonant cluster, but there are also very limited consonant clusters in the initial position of a word. As illustrated there are only 11 combinations of consonantal patterns allowed to occur at the initial position of the syllable; /kr/, /kl/, /kw/, /kʰr/, /kʰl/, /kʰw/, /pr/, /pl/, /pʰr/, /pʰl/, and /tr/. While Timyam (2010) reported that English permits onset consonants of up to three sounds with very strict constraints on shape. The first is /s/, the second is a voiceless stop /p, t, k/, and the third is a liquid /r, l/ or a glide /w, y/. Furthermore, English permits up to four consonants in the coda position, and the patterns can be very varied; for example, /skt/ as in *risked*, /nds/ as in *hands*, /sts/ as in *texts*, and /fθs/ as in *twelfths*. Figure 2.1 presents the consonant distribution of Thai and English and clearly demonstrates the lack of consonant cluster in the final position of words in Thai, similar to most East Asian languages, while English allows far more flexible final consonant clusters. This is the famous problem in English pronunciation for this region: simplified consonant clusters.

	Initial	Medial	Final
Thai	C	C	C
	CC	CC	
English	C	C	C
	CC	CC	CC
	CCC	CCC	CCC
		CCCC	CCCC

Figure 2.1. Consonant Distribution of Thai (Kruatrachue, 1960, p.92)

Regarding consonantal sounds, English has 25 consonantal sounds of which voicing quality is the main distinctive feature, whereas Thai overall has 44 letters, but the actual consonant sounds in the language are less as some letters are no longer used and other letters are similarly pronounced. In the Thai language, there are 21 consonants (Table 2.4) which function as the initial and final syllable differently depending on the phonotactic constraints of the language.

Table 2.4

Consonants in Thai Language

Place Manner	Labial	Labio-Dental	Alveolar	Post-Alveolar	Palatal	Velar	Glottal
Stop	[p] [pʰ][b]		[t] [tʰ][d]			[k] [kʰ]	[ʔ]
Fricative		[f]	[s]				[h]
Affricate				[tɕ] [tɕʰ]			
Nasal	[m]		[n]			[ŋ]	
Trill			[r]				
Approximants					[j]	[w]	
Liquid			[l]				

Stylistic and regional variations also influence speech sounds produced in Thai. Bradley (2010) claims that the major consonantal variable in central Thai is /r/, which is always replaced by /l/. Moreover, it is often that both /r/ and /l/ are omitted when they are in the initial clusters; i.e. /pla/ > /pa/ -fish, /kʰrab/ > /kʰab/ – politeness marker for male

speaker. Additionally, the consonant cluster /kʰw/ can be found as /f/ in some areas; i.e,
/kʰwa:/ > /fa:/. The use of certain consonantal variables as mentioned indicates stylistics
and social stratification in Thai language. The use of /f/ and /l/ instead of /kʰw/, and /r/,
respectively, is found in lower status people in society or those from rural areas. When
compared with English, it is evident that English has more consonantal sounds than Thai,
as shown in Table 2.5.

Table 2.5

English and Thai Consonants (Smyth, 1987, p.345)

p	b	f	v	θ	ð	t	d
s	z	ʃ	ʒ	tʃ	dʒ	k	g
m	n	ŋ	l	r	j	w	h

According to Smyth (1987), shaded phonemes are those equivalent or near
equivalent in Thai and should, therefore, be perceived and articulated without great
difficulty when they occur at the initial position of the syllable. Unshaded phonemes are
those that can result in problems in Thai-accented English. The most comprehensive and
precise analysis regarding this can be drawn as follows; in pronouncing English sounds
that do not exist in Thai, Thai people make the substitution as illustrated below (Figure
2.2).

English: /v/   /θ/   /ð/   /ʃ/   /ʒ/

Thai substitution: /w/   /t/ /s/   /d/ /t/   /s/ /tʃ/   /s/

Figure 2.2. The Substitution of Thai Sounds in English Speech (Smyth, 1987, p.345)

Pronunciation errors arise when the shaded consonants occur at the final position
of the syllable. To elaborate, Thai has eight final consonant phonemes only, and consonant
cluster is never allowed. As a result, English final consonants and cluster pronunciation
difficulties are simply solved with a change in pronunciation to a single consonant.

Moreover, such transformations are systematic-like and not random, demonstrated as follows (Figure 2.3).

English: /d/ /θ/ /ð/ /s/ /z/ /ʃ/ /ʒ/ /tʃ/ /dʒ/   /v/ /f/   /l/

Thai Substitution: /t/   /p/   /n/
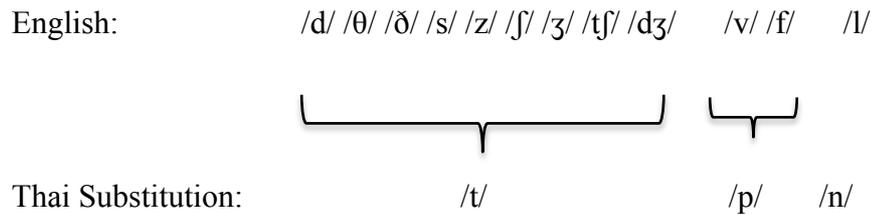
Figure 2.3. The Substitution of Thai Sounds in English Speech (Smyth, 1987, p.345) (Cont.)

Noted above are the major sound patterns of the Thai language which distinctly affect the English pronunciation of Thai speakers. The substitution of Thai sounds in English sounds as illustrated appears to be rule-governed, predictable and not random by Thai speakers.

Luksaneeyanawin (2005) revealed significant phonotactic constraints of Thai that make Thai English pronunciation problematic. In Thai, /f/, /r/ and /l/ sounds can only occur at the beginning of the syllable while the only three fricative sounds in Thai: /s/, /f/, and /h/ can never occur at the final position. Moreover, /r/ in Thai is an alveolar trill; rather than the rhotic sound as in GA. Also, the voiceless stop is aspirated at the initial position but unaspirated elsewhere. In addition, in English voiceless stops /p, t, k/ are audible when released at the end of a syllable while in Thai final sounds are always inaudible. Furthermore, an alveolar stop /t, d/ is retroflex before /r/: as in *trout* and *drive*. A bilabial nasal /m/ may be labiodentals before a labiodentals consonant /f, v/ as in *symphony*, and *emphasis*. A vowel is nasalised before a nasal consonant as in *can*, and *dome* and a stressed vowel is lengthened before a voiced single consonant in the same syllable as in *bid*, and *robe*. These are samples of English phonotactics that are different from Thai and tend to lead to pronunciation errors in Thai-accented English.

Regarding the vowels in English, there are twelve monophthongs and three diphthongs as illustrated in Figure 2.4.
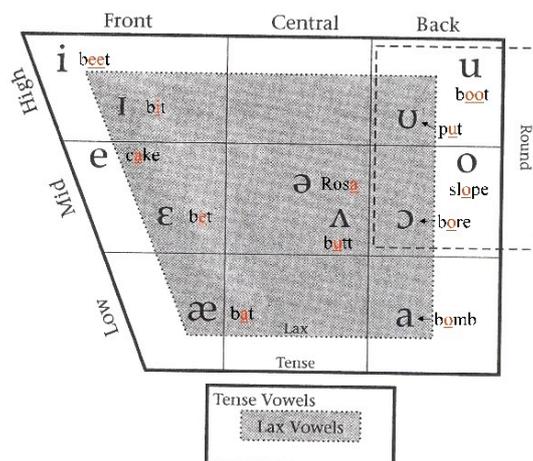
Figure 2.4. English Vowels (http://falarlerentender.com/)

For Thai, Tingsabadh and Abramson (1993) proposed that Thai has monophthongs, diphthongs, and even triphthongs. Figure 2.5 demonstrates Thai monophthongs.
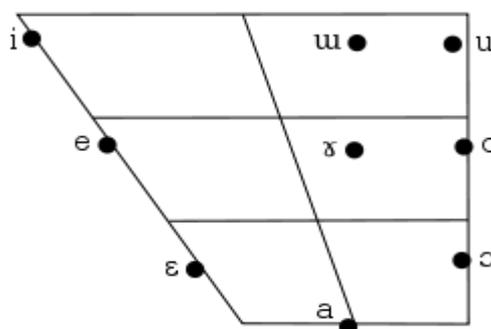
Figure 2.5. Thai Monophthongs (Tingsabadh & Abramson, 1993, p.25)

Besides the abundance of monophthongs, Thai also has diphthongs which are illustrated in the vowel chart in Figure 2.6.
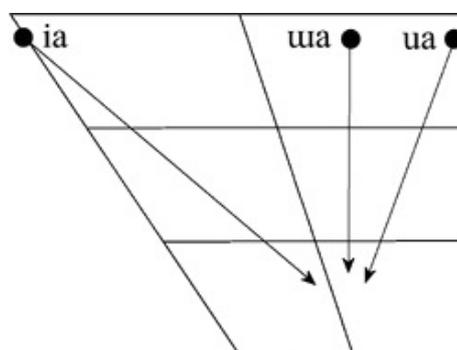
Figure 2.6. Thai Diphthongs (Tingsabadh & Abramson, 1993, p.25)

Phonetically represented, diphthongs of Thai can be presented as /aːj/, /aj/, /aːw/, /aw/, /iːa/, /ia/, /iw/, /uːa/, /ua/, /uːj/, /uj/, /eːw/, /ew/, /ɛːw/, /ɯːa/, /ɯa/, /ɤːj/, /ɔːj/, /oːj/. As

portrayed, Thai diphthongs consist of both short and long vowels. Regarding the triphthongs, Thai consists of three, and they are all long vowels; namely, [iaw], [uaj], and [ɯaj]. Nevertheless, most of the work investigating Thai phonology claim that Thai has only monophthongs and diphthongs and only the work of Tingsabadh and Abramson (1993) raised the issue of triphthongs. When compared with English, it is clear that Thai has a richer system of monophthongal sounds. Therefore, vowel pronunciation is not considered a critical problem for Thai's speaking English. The comparison of vowel sounds between Thai and English is illustrated in Table 2.6.

Table 2.6

English and Thai Vowels (Smyth, 1987, p.344)

iː	ɪ	e	æ	eɪ	aɪ	ɔɪ
ɑː	ɒ	ɔː	ʊ	aʊ	əʊ	ɪe
uː	ʌ	ɜː	ə	eə	ʊə	aʊə

The shaded phonemes are the sounds that have equivalent or near equivalents in Thai and hence are pronounced without great difficulty while the unshaded phonemes are those inexistent in Thai speech sounds. Therefore, Thai English pronunciation of vowels tends to be problematic at the area of diphthong. When pronouncing diphthongs, Thai's tend to pronounce them in the way that the second segment is less prominent than the first segment and even pronounced as long pure vowels such as /eɪ/ as /e:/. Also, Thais fail to glide English and the plain vowels are used as /eɪ/ in day, say and play are pronounced with /e:/. Importantly, English weak vowels such as schwa, which is one of the most significant sound features of English that leads to many problems in NNSs pronunciation, when pronounced by Thai's, are not as weak as they should be due to the influence of the L1 syllable timing, that every syllable must be assigned equal weight resulting in errors of stress in Thai-accented English. Furthermore, English centering sequence such as /ir/ tends to be pronounced as two separate syllables /i/ and /a/ and English front and back vowels can be further fronted and further backed. Luksaneeyanawin (2005) discussed a more

notable point regarding vowels that all front and back vowels can occur at the first segment, gliding to high back vowels as the second segment and can be considered rising closing diphthongs in which the second segment is more prominent. All back and central vowels can occur as the first segment, gliding to high front vowels as the second segment (they can be considered rising closing diphthongs where the second segment is more prominent) and short and long pairs of vowels are different only in quantitative terms. Although, vowels are not given emphasis in Jenkins' (2000) LFC, the study of Thai and English phonology reveal that Thai and English possess vowel use differences. It is worth further investigation into the extent Thai vowels affect English pronunciation.

   2.9.2.2 Suprasegmental Features.   In languages of the Tai Kadai language family, each syllable has tones which can be ranked through five levels based on the pitch of the syllable. The five tones produce a melodious and lyrical language. As Thai is a monosyllabic and tonal language, the meaning of words is heavily varied through the tones assigned to the syllable, and thus the lexis in Thai is contrasted by the tone assigned; for example, /k^{h}ā:/ - remain at the same position, /k^{h}à:/ - galangal, /k^{h}â:/ - to kill, /k^{h}á:/ - commerce, /k^{h}ǎ:/ - leg (Timyam, 2010). Luksaneeyanawin (2005) noted that the property of the syllable in acquiring tone can be determined by types of syllables. The soronant ending syllable (live syllable): syllables ending with non-stop consonant as /m,n,n,w, j/, can acquire all five tones. The obstruent ending syllables (dead syllable): syllables ending with stop consonants as /p,t,k/, can acquire only three tones. In these five tones, three are relatively level and are called static tones; namely, low, mid, and high, whereas the other two are changing, the pitch moves up or down and dynamic tones; namely, fall, and rise.

   The major suprasegmental features frequently found in English phonology that cause problems for East Asian pronunciation of English are rhythm, intonation and stress. Thai's rhythm is syllable-timed as opposed to stress-timed in English. This is a significant influence driving Thai-accented English, as well as other East Asian English. The syllabic pattern of rhythm results in vowels that are equally fully pronounced. As such, in strong

Thai-accented English, reduced vowel pronunciation and stress placement are hardly found. There are numerous works in the field which have investigated the phenomenon of syllable-timed languages on English pronunciation, however, to date they have focused on other major accents, such as Singaporean English (Deterding, 1994, 2001) and Malaysian English (Baskaran, 2004; Rajadurai, 2004).

Stress placement in English is considered a well-known problem in Thai English pronunciation. Stress is habitual and naturally demonstrated in the connected speech of NSs, however, the pattern of stress can be variable and requires acquisition on a word-by-word basis (Timyam, 2010). Timyam (2010) further explains that despite the difficulty in defining the finite rules for determining stress placement in words, native speakers correctly allocate stress to a word they are unfamiliar with or have not encountered before. This implies that there should be some systematic rules of stress in English. The general factors taken into consideration regarding the placement of stress in a word are morphological structure, grammatical category, the number of syllables contained, and phonological structure.

Intonation or the use of pitch at sentence level also helps distinguish different types of utterances in English while in Thai this phenomenon does not exist. Broadly speaking, there are four basic types of utterances in English each associated with a particular intonation pattern: rise and fall, and there grammatical and interactional functions attached to each. For example, when the intonation falls at the end, it is a statement and when the intonation is raised at the end of a sentence, it sounds a question. Additionally, when the intonation is slightly raised, it indicates incompleteness and, Wh-questions usually have a falling intonation at the end of the sentence.

2.9.2.3 Thai-accented English Phonology Features. After reviewing the phonological characteristics of both Thai and English it is evident they possess a relatively different phonology, and the interference of Thai L1 phonological characteristics on English pronunciation clearly results in the unique pronunciation of Thai-accented English.

The information of Thai-accented English phonology provided in this section was conducted via review and synthesis of the existing literature as described. The overall picture of this phenomenon is illustrated in Table 2.7.

Table 2.7

Comparison of Phonological Features between English, Thai-English, and Thai

Aspects	English sound system	Thai – English	Thai sound system
Devoicing	/z/, /dʒ/, /ʒ/, /g/	**/k/, /kʰ/ used instead of /g/** **/s/ used instead of /z/** **/tɕ/ used instead of /dʒ/** **/tɕʰ/ used instead of /ʒ/**	No /z/, /dʒ/, /ʒ/, /g/ in Thai (systematic gap)
Shift in terms of place and/or manner of articulation	Interdental fricatives /ð, θ/ and voiced labio-dental fricative /v/	**/t/, /d/, /f/ used instead of /ð, θ, v/**	No /ð, θ, v/ sounds.
Reduced initial aspiration	Aspiration occurs in the ONSET; unaspirated consonants only occur after /s/	**Aspiration is used interchangeably.**	Contrast between aspirated and unaspirated sounds
Deletion of final consonants	Final consonants can be in a cluster form.	**A cluster is pronounced as a single consonant.**	Final consonant is not in a cluster form but in a single form and fricatives do not occur.
Cluster reduction	Clusters in the ONSET and CODA vary.	**Deletion of cluster**	Clusters in the ONSET occur only /l, r, w/, no CODA cluster
Stress in words	Stress patterns are fixed.	**Variation in use of stress**	No stress patterns
Heavy-end stress: tone groups as intonation patterns	Utterances are divided into tone groups and marked by unit-final intonation patterns.	**Tone groups in pronunciation are not used - intonation is not clear.**	Not intonation language but tone language
Lack of reduced vowels	Vowels in unstressed syllable are reduced to schwa (Weak form).	**No reduced vowels or weak forms – all vowels are pronounced equally.**	No stress distinction by terms of tones
Monophthongization	Glides	**Glides omission - diphthongs with glides are pronounced as plain vowel**	No glides

As demonstrated, after comparing Thai and English phonology, three significant factors were found; namely a systematic difference in segmental features, differences in phonotactic constraints, and a systematic difference in suprasegmental features. Whereas, vowels were not considered a critical contributor in Thai-accented English pronunciation.

2.9.2.3.1 Systematic gap in segmental features. Certain sounds such as /g, ð, θ, v/ exist in English but not in Thai. Hence, Thai speakers tend to produce them via the assimilation process, resulting in the production of /k, t, d, f, w/, respectively. In other words, the speaker tends to change such sounds or assimilate them to the more familiar sounds of their L1 system.

2.9.2.3.2 Differences in phonotactic constraints. Consonant clusters are common place in English, and several consonants are permitted at both the initial and ending position of a word. On the contrary, in Thai, consonant clusters are only observed at the initial position of words and the permitted form is much more restricted than that of English. Hence, Thai speakers have a tendency to omit, delete, or reduce the production of clusters in English pronunciation.

2.9.2.3.3 Systematic gap in suprasegmental features. That Thai is a tonal and syllable-timed language, and English is an intonation and stress-timed language heavily affects the English pronunciation of Thai speakers. A lack of vowel reduction and stress are resulted by this difference. To elaborate, in Thai, vowel reduction and stress are not distinctive features as they are in English which results in the disparity between standard and Thai-accented pronunciation.

Such synthesis of Thai-accented English presented in this research is accompanied by Luksaneeyanawin (2005) who indicates that there are three major phonological problems for segmental features between Thai and English which lead to the pronunciation of Thai English. These three problems are 1) systematic difference, 2) structural difference, and 3) differences in phonetic realisation. Systematic difference refers to the differences in types and numbers of sounds existing between languages. For example, in

Thai, there are only three fricatives /f, s, h/, but, in English there are nine, /f, v, ð, θ, s, z, ʃ, ʒ, h/. As for the structural differences, this is related to differences in syllable structure and sound sequencing in the syllable. To elucidate, both Thai and English have the /l/ sound, but this sound is only observed at the initial position of words in Thai while it is found at the initial and ending position of words in English. Finally, the difference in phonetic realisation is the difference in phonetic details of a certain sound. For example, /r/ is considered trill in Thai but rhotic in English. Regarding suprasegmental features, Luksaneeyanawin (2005) purports that stress in English and tones in Thai are crucial in the production of Thai-English pronunciation. In Thai, stress always falls on the last syllable of the word, resulting the same oral production in L2 English.

In addition to the results obtained by Luksaneeyanawin (2005), Deterding and Kirkpatrick (2006) investigated ASEAN English pronunciation and discovered that the major phonological features of English pronunciation of ASEAN speakers were the reduction of consonant clusters, change in dental fricatives, merging of long and short vowel sounds, reduced initial aspiration, lack of reduced vowels, stressed pronouns, and heavy end-stress. These aspects of English pronunciation are relatively similar to the characteristics of Thai-accented English pronunciation reviewed.

The final phenomenon to be discussed, which was not recorded in any EIL literature but was in the majority of Thai English phonology comparative studies such as Kruatrachue (1960), Richards (1967), Smyth (1987), and Kanokpermpoon (2007) is called *orthographic interference*. It is simply defined as the influence of confusion in spelling on pronunciation. It is indicated that Thai English learners make numerous pronunciation errors when pronouncing newly encountered words due to the mismatch between pronunciations and spelling in English (Smyth, 1987); for example, both /ð/ and /θ/ is spelled as th. The ability to accurately distinguish between the two sounds sharing the same spelling form is considered an innate ability of NSs. Kanokpermpoon (2007) also notes that Thai English learners with low proficiency have difficulty in pronouncing the /ŋ/

sound correctly when it is followed by suffixes such as {-er}. They tend to pronounce it as /k/ clinging to the form of g preceding that suffix. The situation is exacerbated when English sounds are represented by Thai spelling, for example, in the Thai system of spelling final consonant, the phoneme /p/ is used in correspondence to all /p^h/, /p/, /b/, and even /f/ (Kruatrachue, 1960, p. 103). This is recognised as the phenomenon of orthographic interference, and for English NNSs leads to the mispronunciation of English. The use of the Thai spelling system of English words may cause confusion for the learners regarding the original pronunciation.

Given the high frequency of phonological discrepancies between Thai and English, it is unreasonable to assume that all discrepancies will result in international intelligibility failure. This notion is exemplified in research looking at Singaporean English, which, as one of the most famous varieties of English in Asia, has been investigated worldwide, however, only four major studies (Date, 2005; Gupta, 2005; Kirkpatrick & Saunders, 2005; Setter, 2005) are raised here. Consensus has yet to be reached among researchers regarding the phonological features that result in intelligibility failure of Singaporean-accented English. For example, Setter (2005) identified missing final consonant clusters as an impediment to intelligibility while Date (2005) listed the replacement of dental fricatives with alveolar plosives and the reduction of final consonant clusters as interfering with the intelligibility of Singaporean English. As demonstrated, the reported phonological features considered a threat to the intelligibility of the same accented English are inconsistent.

The Inner Circle varieties of English are considered stress-timed with weak forms with reduced vowels naturally and commonly occurring in the connected speech of native speakers of English. The prevalent feature in non-native varieties of English pronunciation is the less frequent use of reduced vowels and consonant cluster simplification. However, there is a lack of continuity in the literature as to which features result in the greatest impediment to intelligibility. Deterding (2012), Jenkins (2000), and Cruttenden (2001)

reported that weak forms were not demonstrated as a threat to intelligibility. While for cluster simplification, Jenkins (2000) commented that initial and medial cluster simplifications were. With the huge disparity between Thai and English phonology leading to the obvious influence of Thai L1 on English pronunciation, it is imperative that English educators and researchers in Thailand conduct more empirical research on the intelligibility of Thai-accented English in order to establish the pronunciation core and design effective pronunciation teaching and assessment guidelines for international communicative purposes.

2.10 Closing Remarks

The position of English as an International Language does not take place in a vacuum. In effect, it is historically and discursively constructed in particular contexts. EIL promotes the recognition and integration of English varieties, which allows for the outdated and utopian attachment to native speaker norms to be disregarded. The review of literature provided a wealth of insight into the current trend of English use and perception; a new paradigm which encompasses a multitude of varieties, all legitimate Englishes in their own right. The pluricentric nature of English in the contemporary context and the concept of intelligibility has resulted in the greatest challenge for EIL professionals; how to deconstruct English while maintaining an effective level of international communication. Most crucially perhaps, the field needs to push forward alternative avenues toward the underlying ideologies of inclusion, the divergence of visions, the discourse of hybridity, and the inclusivity of the teaching and assessment approach to ensure linguistic health for learners. To achieve this goal, there must be cooperation from teachers, founded on increased awareness and access to relevant research. An understanding of the plucentrisity of English must be fostered in the classroom, increasing awareness of multiple languages and cultures, and furthermore, focuses on the use of English within the local milieu.

CHAPTER 3

METHODOLOGY

3.1 Introduction

In this research, the questions focused on the association of actual phonological intelligibility level of Thai English pronunciation to different groups of listeners, and its problematic segmental features that led to intelligibility failure. The supplementary goal of the research examined the association between intelligibility and attitudes, familiarity to international accents of English and perceived intelligibility. To fulfil such purposes, a quasi-experimental counterbalanced design was selected with the instrument as transcription task for spontaneous speech which utilised both orthographic transcription and pseudo transcription, allowing the researcher to examine the actual level of intelligibility as well as identify those pronunciation features that were problematic to the international listeners who are the interlocutors in EIL.

The design of the study is discussed in this chapter along with the rationale for choosing it. Various elements that comprise the experiment are described, beginning with 1) the construction of materials: speakers, recording procedure, accentedness judging, and authenticity of speech sample transcription 2) the construction of the transcription task and pronunciation respelling system and 3) the construction of the questionnaire. The following sections discuss participant sample, sampling methods, and data collection and analysis. Finally, the results from the pilot studies are discussed in light of their implications for the main research. The chapter concludes with the main data collection procedure and summary of the chapter.

The research questions of this study were as follows.

1. To what extent is the level of Thai accentedness (weak, moderate, and strong) in spontaneous English speech associated with intelligibility level of the following groups of participants, as measured by the accuracy of their transcription of the tested speech?

a)   Native speakers of English (NSs).

b)   Non-native speakers of English with non-Thai L1 (NNSs)

- Arabic, Chinese, Japanese, Spanish, and Portuguese

c)   Non-Native Speakers of English with Thai L1 (Thais).

2. Which specific pronunciation features of Thai English tend to be problematic features in intelligibility for these groups of English participants, as measured by the errors in their transcription of the tested speech?

3. To what extent are participants' attitudes, familiarity to international accents of English, and perceived intelligibility, as measured by rating in the questionnaires with 6-point Likert scale, associated to actual intelligibility performance?

3.2 Research Design

In social sciences research with human subjects, experimental designs – in which the researcher has full control over the scheduling of experimental stimuli (e.g., when and to whom, including the ability to randomise exposures) – are often not practicable (Campbell & Stanley, 1968; Hardman, 2010). Therefore, a quasi-experimental, specifically a counterbalanced design was selected. Counterbalancing is considered effective when pre-tests are inappropriate due to posing a potential testing threat to internal validity. Additionally, it was not practicable to make the comparison groups equivalent prior to treatment through the process of random assignment. All respondents were therefore exposed to all treatments, or stimuli, in a rotational order. In the case of the current study, all three speech samples were rotated in presentation to all listener groups.

The research sample consisted of 45 participants divided into sub-groups of three based on participants' L1, which resulted in 15 sub-groups for the data collection process.

In each sub-group, the conditions (speech sample) were presented in a randomised order to avoid the possible prediction that conditions increased through strength of foreign accent, such measures were employed to negate bias on later attitude tests. Participants were required to transcribe what they acoustically perceived in each condition, each speech sample was segmented at the natural pause and sufficient time was allowed for transcription, there was no cap on the length of time given for transcription. Following transcription, participants completed the subjective rating questionnaire. Once the accent was rated in terms of attitudes on a Likert scale, the researcher moved on to the next condition following the same procedure. The examples of the presentation of conditions in each trial are shown in Figure 3.1.

Sub-Group 1	X1	O	X2	O	X3	O
Sub-Group 2	X2	O	X3	O	X1	O
Sub-Group 3	X3	O	X1	O	X2	O

Figure 3.1 The Presentation of Speech Samples to Sub-Group of Listeners (Wassanasomsithi, 2011, p. 127)

As illustrated, sub-group one was presented with speech sample one, followed by two then three. Sub-group two started with speech sample two, followed by three, and finished with one. For sub-group three, speech sample three was presented first, then one, followed by two. The prescribed procedure noted above, and pattern was repeated across all 15 sub-groups in the data collection process, and the order in which the sub-groups received or listened to the speech samples was determined randomly. The association of actual intelligibility obtained through each main group of listeners, as classified through their L1, was examined by comparing the average scores for all main groups in post-test for each speech sample (Wassanasomsithi, 2011).

3.3 Construction of Speech Samples

3.3.1 Authenticity of Speech Sample

The review of literature revealed a vast array of differences in the utilised speech samples. Considerations were various, ranging from reading standardised sentences (Hardman, 2011), pronouncing a prepared word list (Major, 2011), and spontaneous speech (Kirkpatrick *et al.*, 2008; Pongpairat, 2011; Walt, 2000). Those using any forms of prepared speech prioritise the accuracy in pronunciation by the speakers in a laboratory setting and the completeness of elicited sound features as believing that conscious pronunciation can lead to higher pronunciation accuracy. Such claims are contested by those using spontaneous speech (Kirkpatrick & Saunder, 2005; Tangiguchi & Shibata, 2007), and by this study, where the focus is authenticity of real world communication. Briefly explained, it is evidenced in the literature that errors in pronunciation tend to be decreased when formality is increased (Labov, 1960). In addition, in connected speech, vowel and consonant segments have different phonetic realisations when compared to their production in an isolated form - citation form. This adheres to the underpinning focus in EIL intelligibility, that measuring authentic speech is considered more beneficial than any forms of prepared speech. When considerating the method of elicitation in this study, the connected spontaneous speech employed was examined phonetically and it was evidenced that there was a distinct range of Thai accent which also covered all general features of Thai English pronunciation as judged by five linguistic experts (more details on 3.3.2 Accentedness Judges). In addition, the topic of speech was controlled to the specialised area or major of study of the speakers (political sciences, literature and drama, and environmental engineering) to ensure that the content of the speech was not too general or too vague for the listeners to predict as employed in some other previous studies such as Kirkpatrick *et al.* (2008), Pongpairat (2011) and Walt (2000). The aforementioned studies relied on very general and broad topics to ease intelligibility. To ensure the minimum predictability rate of the speech samples in this study, the keywords used by the speaker in

each selected speech were checked for their frequency with British National Corpus (BNC) and it was found that they had a relativley low frequency of occurrence in the corpus. To illustrate, the highest frequency keyword throughout all samples was "Business" from the strong accent speech sample. Its frequency was rated as 2,780,352 in the BNC, which can be calculated as 0.05% of a total of 4.7 billion words collected in the entire corpus database (Appendix A: Frequency of Keywords in Each Speech Sample). Thus, the relatively low frequency of keywords used in each speech sample confirms that the content of the speech samples was not overly general or too easy to guess. Moreover, the predictability of the content was also examined by another fifteen English users (five NSs, five NNSs, and five Thais), who were not the listeners or intelligibility raters in the main study. The additional assessment of the speech samples was conducted using a word-filling task, which involved the removal of some key words in each speech sample. The results showed that the highest predictability scores were from NSs and Thais at the rate of 22% in the weak accent condition, which is still considered relatively low (Appendix B: Content Predictability Test and Results). As a result, the quality of the non-predictable controlled topic and the completeness of Thai English sound elicitation is considered reliable for the spontaneous speech sample in this study, which is the ultimate goal of international intelligibility testing: authentic communication.

3.3.2 Speakers and Recording Process

The current research employed authentic, spontaneous connected speech as the speech samples. According to the field of intelligibility testing drawn in Chapter 2, previous studies used diverse forms of speech samples; reading a set passage (Pongpairat, 2011) or set of standard sentences (Hardman, 2010). Arguably, it has been clearly stated that though it is very time consuming and full of unwieldy data (Rajadurai, 2007, p. 96), the authenticity of the speech must be prioritised in intelligibility research (Rooy, 2009). For the aims of this study, the researcher was interested in, and focused more on, casual and authentic speech in communication rather than careful speech recorded in a laboratory

setting, such as reading out loud where the speakers are more cautious and monitor their speech (Labov, 1964).

In addition, Kennedy (2009) noted that intelligibility testing focused more on the recognition of isolated words or sentence level rather than extended speech. Whilst providing researchers with statistical power to support their findings (Hansen-Edwards, 2008) the information obtained from such experiments often lacks ecological validity and gives little information about the effectiveness of communication in real-life situations. Considering the goal of pronunciation instruction is to prepare learners for interactive, spontaneous and extended L2 communication, such measures are thought to be ineffective. Therefore, Kennedy (2009) elucidated that it is important that research in this field develops tools for intelligibility measurement of extended naturalistic speech that values features of authentic L2 communication. This might be challenging for a researcher, but it is by no means impossible (p.142). Thus, the researcher opted to use spontaneous speech as the stimuli to test the intelligibility level of the participants.

In the construction of Thai-accented English speech for intelligibility measurement, there were a total of 11 Thai English speakers, studying at tertiary level in the UK, asked to give a spontaneous speech regarding a controlled topic as their dissertation or term project. All participants were deemed to have attained a competent level of English proficiency as NNS students require IELTS of at least 5.5 to study at a UK tertiary institution. To elicit natural L2 speech, each speaker recorded a 10-minute talk in an authentic setting where there was background noise such as traffic, surrounding noises, and background conversation. In such an environment, the speakers were believed to speak more freely and without pressure as opposed to the controlled recording process in a sound laboratory setting, and therefore would monitor their pronunciation less. However, after the initial recordings were finished, all speech samples were auditorily edited for clarity and volume by the Pro Tool programme in a professional sound editing laboratory, where background noise was eliminated to increase effectiveness of the intelligibility listening test. Speech

samples were then assessed for quality, clarity and perception of sounds by 20 judges (Appendix C: Sample of Voice Quality Rating). The controlled topic of speech was the specialised area of each speaker; this was either the research topic for postgraduates or term project for undergraduates. While previous research has employed the use of spontaneous speech, such as that of Kirkpatrick *et al.* (2008), the topic of the speech was controlled to be as general as possible such as self-introductions (Tangiguchi & Shibata, 2007) or vacation talks (Kirkpatrick & Saunders, 2005) to avoid word confusion between context and sounds. Converse to this assumption, the current research aimed at a higher level of control and focused speech in the specialised area of study of the speakers. Given the review of literature on speech intelligibility, the topic required control to ensure that the test was free from the listeners' predictability concerning context, sentences, vocabulary, and sounds to be pronounced (Clark *et al*., 2007), also identified as the text independent method (Holmes & Holmes, 2001). If the context was too general, vague and simple, listeners reverted to the use of contextual clues rather than hearing the word solely based on the utterance of the speaker. In addition, as this research also aimed to elicit the problematic sound features perceived by the participants, the use of a controlled topic of speech that used technical and uncommon terms, which were assumed to be out with the general knowledge of the participants, was considered most appropriate. A further benefit of the complex lexical items throughout the speech samples was that they promoted the use of the transcription system, invented to transcribe problematic words in the pattern of the string of sounds perceived, on the assumption that participants would be unfamiliar with the spelling of such terms. The methods employed allowed for a critical analysis of the extent that participant perception matched speaker production and the actual pronunciation of the term. The analysis permits the claim regarding increased construct validity of the instruments employed. If every term in the speech was easily recognisable and predictable from the context, an accurate transcription could be due to the familiarity of the listeners to those terms and the context, rather than as a result of how the sounds were pronounced.

Prior to commencing recording, the researcher, who was the interviewer, briefed the speakers about the purposes of the research and obtained their informed consent (Appendix D: Informants Consent Letter). Throughout the recording process, the researcher played the role of listener and did not interrupt the speaker, the only exception was when it was necessary to prompt to continue by way of asking questions. Finally, each recorded sample was edited and segmented into a one minute excerpt for use as a potential condition in the intelligibility test. The recordings were analysed to locate a suitable one-minute excerpt which contained minimum fillers and pauses with no interruption from the interviewer.

3.3.2 Accentedness Judges

Foreign accent (Thai) was classified into the three levels − weak, moderate and strong for the 11 selected speech samples. The samples were sent to five linguistic experts (trained phoneticians) and 20 non-linguistic experts (English NSs). Non-linguists were asked to rate their perception on the 3-point Likert scale from weak, moderate to strong regarding the scope of, How do you find the level of foreign accent in the following recordings? (Appendix E: Sample of Accent Rating by Non-Linguist Expert). The use of non-linguistic experts was believed to provide an insight into how the accent was perceived based on the interlocutors generally encountered. Non-linguistic experts were recruited on voluntary basis and no remuneration was offered.

The five linguistic experts or trained phoneticians were asked to rate the level of accentedness of each recording into the same three levels but with the additional instruction "Please rate at what level of foreign accent the given speech sample does not conform to any standard varieties of English and specify the reasons for your rating by raising at least five main features of segmentals and suprasegmentals supporting your judgement, that you find are deviated from standard English" (Appendix F: Samples of Accent Rating by Linguist). Linguistic experts were paid 20 GBP for their participation in judging level of foreign accentedness for this research.

From the 11 Thai English speech samples rated for accent, the sample with the highest rating for each level, from both groups of judges, was brought forward for inclusion in the study. Feedback from linguistic experts indicated that the speech samples contained a great range of variation, typically found in Thai English pronunciation; such as, variation specific consonant , /z/ towards /s/, variation in both vowel length and vowel quality, regular sentence rhythm of syllable timing, vowels being produced as full vowels instead of weak forms in unstressed syllables, strong devoicing, and cluster simplification. Every Thai speaker in this study demonstrated such a pattern of pronunciation but differed in the extent to which these were expressed in their accent.

The conclusion of accentedness judging from both groups of judges is provided in Table 3.1 and 3.2. Table 3.1 represents scores from non-linguistic experts and Table 3.2 represents scores from linguistic experts. The speech sample that gained the highest rating from both groups of judges for the representation of weak accent was speech sample two, the moderate accent was speech sample one, and the strong accent was speech sample 10 and were thus used in this study. As presented both non-linguistic experts and linguistic experts were in consensus regarding which samples were representative of each level of accent and therefore inter-rater reliability was confirmed.

Table 3.1

Accentedness Rating from NSs: Non-Linguist Experts (n = 20)

Recordings	Level of Foreign Accent		
	Weak	Moderate	Strong
1	3	**15***	2
2	**15***	5	0
3	3	13	3
4	3	7	10
5	2	12	6
6	2	10	8
7	5	9	6
8	4	7	9
9	5	11	5
10	5	3	**12***
11	2	8	10

* Most agreed rating

Table 3.2

Accentedness Rating from Linguist Experts: Trained Phoneticians (n = 5)

Recordings	Level of Foreign Accent		
	Weak	Moderate	Strong
1	0	5*	0
2	4*	1	0
3	1	2	2
4	1	1	3
5	1	3	1
6	0	3	2
7	3	1	1
8	1	0	4
9	0	3	2
10	0	0	5*
11	1	2	2

* Most agreed rating

Following identification of the speech samples to be tested, the location to assign the internal pause (where to pause the recording), in which the participants were to perform the transcription in the one-minute speech, was determined. Initially, the location of internal pause was assigned syntactically (at the end of the sentence) however, the pilot studies highlighted that with such length, it was almost impossible for the participants to perform effective transcription. Therefore, the location of internal pause was later amended to the natural pause or intonation phase of the speaker which is the delivery of one chunk of speech at a time which can be divided either by pauses, in-breaths, or both (Szczepek Reed, 2010b).

In this research the natural pause was approximately every three seconds of speech, and given dialogue length this was, on average, every 5-10 words. Although the

natural pause was more sensitive to detect and identify, the shorter length of speech chunk was realised as far more effective for the transcription process. Certain words at the beginning and end of a chunk were fractured in the middle of pronunciation, but participants were carefully instructed to disregard those and transcribe only what was fully pronounced as per their perception. Those words cut in the middle were excluded from the analysis, and as there were a very limited number of words that fell into this category, the impact on the study was considered negligible. During the audio quality editing process, an auditory marker, *beep* sound, was added to the recording to mark the end of a chunk and signal to participants to begin transcription process.

3.3.3 Authenticity of the Transcription of Speech Samples

To ensure authenticity of the transcription of the speech samples an inter-rater technique was adopted to scrutinise the transcription. Following identification of the three highest rated speech samples for each level of accent, the researcher then transcribed them for use as the stimulus in the research. During the transcription, the recording was played as many times as necessary. The accuracy of the transcription was then assessed by a Thai TESOL teacher and again by a native English speaker teaching English in Thailand for more than 10 years (inter-rater technique) to ensure reliability of the transcription (Appendix G: Transcription of Speech Samples and Sample of Transcription Validation). The completed and validated transcriptions were then presented back to the speakers with a replay of the recorded speech to check for accuracy and authenticity of the transcription. This method is known as the member checking method (Creswell, 1994), which states that after the information is obtained and processed, when shown to the participants, if they confirm the accuracy and completeness of the data, then the data is said to have credibility. The overall goal of this process was to provide research data that was authentic, original, and reliable. In this research, the original transcription was considered accurate because the agreement in rating among four raters (researcher, Thai TESOL teacher, NS TESOL teacher in Thailand, and the speaker) was 100%.

3.4 Construction of Transcription Task and Pronunciation Respelling System

The complex and convoluted process of intelligibility measurement intimated that the construction of the transcription task and pronunciation respelling system was a very delicate and crucial stage of the present study. As described in Chapter 2, the most effective tool for such measurement is still contentiously debated. As suggested by Hughes and Szczepek Reed (2016), researching speaking is eclectic and covers many fields in linguistics and applied linguistics including phonetics, phonology, socio-linguistics, pragmatics, intercultural communication, and second language pronunciation. Therefore, when selecting the most appropriate instrument for research data collection, the most fundamental step is to carefully refer to the research objectives, questions, and the conclusions expected. In this current study, not only was level of intelligibility to be measured but also the sound features that resulted in intelligibility failure. The data obtained from instruments such as questionnaires (intelligibility rating) and interviews on how much speech was intelligible to the participants (interviewee) or on how comfortable they were in understanding the speech was based only on the subjective judgment of the participants. The participant may claim that the speech tested was highly intelligible for him/her even though it was not, a form of response bias or an overconfidence in their perceptual ability. Therefore, the use of subjective tests must be used in tandem with objective tests to provide a reliable comparison of results. This, in turn, was the supplementary goal of the current research: to test the association and reliability of intelligibility data gained from subjective and objective tests. Also, an objective intelligibility test, such as dictation or cloze test, were not appropriate instruments for the current study because they are more suitable for testing intelligibility at the level of an isolated word that is carefully pronounced rather than extended and spontaneous speech (Miller *et al*. 1951). As can be seen from the literature, studies that have employed such instruments dealt with intelligibility at the level of individual words and whether each single, carefully pronounced word was understandable. Moreover, in many of previous

intelligibility studies, how listeners perceived the sounds pronounced was not investigated, true for even the influential studies in the field as Jenkins' (2000) LFC, Seidlholfer's (2002) Vienna-Oxford International Corpus of English, and Kirkpatrick's (2010) English as a Lingua Franca in ASEAN. The current study sought to examine perceived sounds and their interplay with intelligibility hence, the transcription task was considered the most appropriate. Like other objective intelligibility tests, the transcription task gathered actual and concrete data on how intelligible the speech tested was (Nejjari *et al*., 2012). Also, together with the specially designed transcription system which will be elaborated later in this part, the transcription task developed can show how the participants acoustically perceived the string of sounds in a word as pronounced in spontaneous speech. In sum, the transcription task was chosen for the current research as it could reveal both the intelligibility level possessed by each listener and the problematic sound features perceived by them. A further exploration of speech intelligibility testing, in the realm of speech synthesis, substantiated the suitability and practicality of the transcription task, and was found to be the most frequently utilised instrument in the study of speech intelligibility, speech recognition, or speech understanding (Hawley, 1977; Holmes & Holmes, 2001). Conversely, studies have employed orthographic transcription on the principle that such methods can elicit more trustworthy data regarding intelligibility. Orthographic transcription can be observed in the research of Hardman (2010) who investigated Chinese-accented English intelligibility levels of international students in the USA and Nejjari *et al*. (2012) who investigated how different levels of Dutch accent in English speech were intelligible to the listeners employed on the basis that it can elicit more trustworthy data concerning the intelligibility level of the sample than other available methods.

In brief, a transcription task *per se* is the orthographic record of spoken language performed by the transcriber, and transcription performance is dependent on the level of speech intelligibility possessed by the individual language user. To negate the effects of

contextual clues, the participants in the present study were provided with plain paper for transcription, the test was thus considered clue-free and hence brought more actual and reliable results. Nevertheless, transcription in an experimental setting is not simply writing down whatever you heard.   Heselwood (2013) postulated regarding the methodological implications that a transcription task could be designed to suit the purpose of the research being conducted.   There are many potential forms of transcription; for example, specific transcription, orientation transcription and morphophonemic transcription as elaborated in Chapter 2. However, as can be seen from review of the literature, unlike other forms of transcription that employ the International Phonetic Alphabet (IPA) as the means for transcribing, spelling pronunciation or orthographic transcription is the only form of transcription that uses alphabets or orthography to transcribe how the utterance is pronounced. In this type of transcription, it is crucial that the transcriber recognises the words and knows how to spell them correctly. Subsequently, there is a sub-type of transcription in the sphere of spelling pronunciation called pseudo- or proto- transcription. This form of transcription uses orthography for the transcription (spelling the sound) but is only used when the transcriber is not aware of the written form of the word. At such times, the word is transcribed based on the knowledge of its pronunciation by using alphabetic symbols. It has been stated that this process is not comparable to performing orthographic transcription but rather denotes pseudo transcription which uses orthographic resources as a pseudo notation (Heslingwood, 2013).

According to the aims of the research, both transcription methods were considered appropriate and thus were selected for use. Underpinning this selection was the sample population (listeners or transcribers) who lacked the technical knowledge for IPA. English NS and NNS participants who transcribed the utterances (Thai-accented English speech) in this research were general language users in an authentic situation, not trained phoneticians. Therefore, it was understood that they were not IPA expert users. As such, the use of IPA in any transcription form was not feasible. Although phonetic transcription

using IPA can indicate which sounds the listeners acoustically perceived, it cannot reveal if the utterance was intelligible or recognised as the language being tested, as it only provides a visual representation of the speech sounds. For an accurate representation of speech recognition by the transcriber, transcription which requires a correct written account of the work must be employed. A further deliberation of speech samples themselves related to the level of topic control. To prevent predictability in the samples, the topic of speech was controlled, and it is undeniable that there were some technical and uncommon terms produced by each speaker throughout the samples. As such, during the transcription process, when encountering unfamiliar or unknown technical terms, it was assumed that the listeners might have clearly perceived the pronunciation of that term but lacked the lexical knowledge to spell it. Alternatively, participants were unable to perceive the pronunciation clearly and hence were unable to write the word down correctly (pronunciation factor) regardless of whether they knew the word. Finally, in addition to testing how intelligible the utterances were, this research also aimed to elicit the errors in pronunciation in each sound as reflected by the transcription of the listeners both in technical and other possible terms.

Therefore, after careful consideration of all the compounding factors, the transcription tasks chosen for the present study were **Orthographic Transcription** and **Pseudo Transcription** with the use of a specially designed **Pronunciation Respelling System**.

Regarding the selection of pronunciation respelling system employed in this research, there was a requirement for certain criteria to be met 1) it must be free of non-alphabetic symbols and diacritics, and 2) it must be very comprehensive for listeners who lack a phonetic background and require minimal time for training. Consequently, the pronunciation respelling system that was selected for use in this study was adapted from the **Scholastic Dictionary** which is a dictionary designed for children aging between 8-12 years old. After a thorough review of several systems; namely Americanist Phonetic

Notation (APN), BBC Phonetic Respelling, The Chamber Dictionary, Scholastic Dictionary, it was determined that the system of Scholastic Dictionary was the most comprehensive, covered every speech sound in English, and used English alphabets only, while in other systems, some IPA symbols such as schwa were still found (Appendix H: Pronunciation Respelling System).

Using the above methods and instruments, the participants were instructed to perform the transcription tasks as follows: based on their judgment, for words participants were certain were heard clearly, recognised, and that they knew how to spell, they were required to use the form of common orthographic transcription to allow for a critical analysis of the intelligibility of the speech. However, participants were advised to use the pronunciation respelling system; pseudo-transcription, for those words not heard clearly or that they did not know how to spell. This method was to elicit which sound features of the speech samples resulted in problems for the listeners. However, the frequency of appearance in the results was expected to be minimal. In order to aid transcribers, the pronunciation respelling system, as shown in Appendix H, was printed on coloured A4 paper and laminated for each individual.

Pilot studies were conducted and from those a critical issue regarding the transcription construction was highlighted which led to the development of a systematic transcription form to aid participant transcription and ease analysis. The development of the form allowed for a more systematic and effective means of eliciting problematic sounds. The transcription form was developed by separating each chunk of speech sample at the natural pause with a provided space for the orthographic transcription and pseudo transcription. In an attempt to gain a complete understanding of the reasons for participants reversion to pseudo transcription, the form was populated with three choices from which participants were to choose the most relevant (Appendix I: Transcription Form and Appendix J: Samples of Real Transcriptions Data).

The design of the transcription method employed in the current study was a response to the limitations identified in previous research. It is evident that previous studies which tested intelligibility levels and attempted to present problematic sound features of non-native English varieties, such as that of Jenkins (2000), Seidlholfer (2002) and Kirkpatrick (2010), analysed the data by examining errors in transcription/ miscommunication in conversation and compared them to the standard pronunciation of that term. The question raised from such analysis concerning how these problematic sounds were actually perceived by the listeners, was somehow ignored. Given their methodology, it was possible to show the level of intelligibility of each speaker, but how each problematic sound was perceived remained unclear. For illustration, the data could indicate the failure in the perception of the pronunciation of the whole word, as seen from error transcription or communication failure, but not how the actual sound string in each syllable of the pronounced word was misperceived. The objectives of this study were met, by use of the transcription task for extended and spontaneous speech which commanded more objective information on intelligibility. Additionally, the transcription system developed allowed for further analysis of the problematic sound features that led to a failure in intelligibility. With the transcription tasks specifically designed for this research, the current research was considered rigorous, innovative, and different from previous studies that had implemented transcription in a more simplistic manner with no structured form. By the same token, this research not only analysed accurate transcription but error transcription was also analysed to find the problematic sound features as perceived by each listener. Regardless of the spelling knowledge of the participants, every string of sounds in the speech was expected to be transcribed using either the normal orthographic transcription or pseudo transcription using the specially invented transcription system which allowed researchers to investigate how the sound string in a word was in fact acoustically perceived by the listeners.

3.5 Construction of Questionnaires (Attitudes Survey)

Questionnaires were another instrument developed for this research. It was hypothesised that in measuring intelligibility, participant attitudes towards the language would have a quantifiable impact. The main purpose for using questionnaires in this study was to investigate sociocultural and other factors associated with intelligibility; namely, attitudes, familiarity to international accents of English, and perceived intelligibility from rating methods. Familiarity toward international English and perceived intelligibility were rated directly using subjective methods. There were three levels of familiarity to international accents of English provided for the rating; very familiar, fairly familiar, and not familiar. Perceived intelligibility, was rated using a 6 -point Likert scale from 1 = very intelligible to 6 = very unintelligible. To avoid participants opting for a neutral stance, the rating scales were designed using an even number of points, which forced them to choose either positivity or negativity toward the tested element (Jenkins, 2007). Similarly, for the data analysis procedure, the ratings were interpreted as binary data: positive and negative. To illustrate, regardless of where the item was rated between 1and 6, a rating between 1 and 3 was interpreted as positive while a rating between 4 and 6 was interpreted as negative. The analytical approach described was motivated by the wish to see either positive or negative perspectives of the listeners in relation to their actual intelligibility scores rather than a neutral view.

Regarding measurement of attitudes; direct measurement was not considered due to the vulnerability of such measures to response bias. In fact, it was suggested that in the field of attitude measurement toward language, the instruments used should be as indirect as possible as the ideal answer in a direct test is discernible, the ramifications of which are unreliable data. With this principle, Lambert *et al*. (1960) developed the matched guise technique which is a language attitude test conducted by providing speeches with exactly the same content for the listeners to listen to and rate. These speech samples were produced by the same speaker and differed in terms of the accent used only. The listeners

then rated how they felt toward the speaker of these excerpts based on perceived personality traits, such as intelligence, friendliness, height, prestige, leadership, dependability and sociability. By using such measures, it could be determined how the listeners actually felt toward the accent of the speech itself rather than any other elements because they were all produced by the same person, which increased the construct validity of said measures. The personality traits of the speakers as used in the matched guise technique were later used in many studies for language attitude tests (Ball, 1983; Bresnahan, Ohashi, Nebashi, Liu & Shearman, 2002; Doss & Gross. 1994; Papapavlou, 1998). The main impetus was not on the personality traits provided for rating in the test but to elicit the attitudes – positive or negative, towards the accent based on indirect traits of the speaker. Positive ratings of personality traits were indicative of positive attitudes toward that accent, and negative ratings reflected negative attitudes. The use of such indirect personal trait items reduced the awareness of the aims to listeners while ratings of their attitudes toward the accent were collected. The listeners were not aware that they were being asked to indicate how positively or negatively they felt toward the accent, and the data obtained concerning their attitudes was more reliable than what would have been gained using direct measures either in the form of interview or questionnaire.

The questionnaire used in this research consisted of two sections; 1) personal information which included a rating scale for familiarity to international English, and 2) attitudes toward each speech sample and personal judgment on how much each speech sample was intelligible.

The first section of the questionnaire collected details of the personal background of the participants such as age, gender, country of birth, mother tongue and familiarity with international English. The second section, completed after the transcription task, consisted of the subjective appraisal. The participants were required to rate how intelligible each sample of speech was on a 6-point Likert scale ranging from 1 = *very intelligible* to 6 = *very unintelligible*. It was expected that better performance in the transcription (objective

data) would positively correlate with a high intelligibility rating (subjective data). However previous research has demonstrated that both positive and negative correlations have been found i.e. those rating high on intelligibility resulted in low performance in transcription and vice versa (Egan, 1977; Hawley, 1977). The results gained from the objective tests were analysed in relation to subjective ratings, which provided a basis from which to contend previous studies that relied on testing intelligibility through subjective methods only.

The second section of the questionnaire rated attitudes and was comprised of five components each rated on a 6-point Likert Scale. The attitude components measured were correctness, acceptability, pleasantness, friendliness, and intelligence. Like the scale used for perceived intelligibility level, the components of the attitude test were designed for the listeners to rate in bipolar options through a 6-point Likert scale, for example from 1 = *very correct* to 6 = *very incorrect*, 1 = *very acceptable* to 6 = *veynœpbɛ̀*. Both sections of the questionnaire were adapted from Jenkins (2007). However, in Jenkins (2007), the attitudes survey also included items related to correctness, acceptableness, and familiarity. For the current research, these items were built upon with the addition of friendliness and intelligence. These items, friendliness and intelligence, were included in this research based on the review of literature where it was shown that friendliness and intelligence were the most common items in language attitudes surveys (Birch & McPhil, 1997; Roh, 2010). Also, these two items originated from the classic method of attitudes testing called the matched guise technique (Lambert *et al*., 1960). Familiarity to international English was included in the first section of the questionnaire because the researcher considered familiarity toward international English a personal experience and thus was provided as part of participant's personal information (Appendix K: Questionnaire).

3.6 Participants (Intelligibility Raters)

According to the context of Thai-accented English communication, similar to many other accents of English, the interlocutors can be classified into three groups as English native speakers, English non-native speakers who do not share L1, and those sharing L1. In this study, there were three groups of participants involved in measuring Thai English intelligibility; English NSs, English NNSs who were non-Thai, and Thai speakers. Each group consisted of 15 participants. Regarding the group of English NNSs who were not Thai, the selection of participants was based on their L1 using information from UNESCO (http://www.bbc.co.uk/languages/guide/languages.shtml) which listed the most commonly used L1s in the world. Consequently, there were five different L1s selected; Arabic, Spanish, Portuguese Chinese, and Japanese. Three participants from each of these L1s were included in the study. In total, the sample for the current study consisted of 45 participants ($n = 45$). Aside from L1, which was the main criteria in selecting the NNS participants, participants were only considered if they had attained a bachelor degree to ensure they had sufficient academic skill to ascertain academic language in general. NNSs were postgraduate students in the UK, and similar to the Thai speakers that recorded the samples, must have scored at least IELTS 5.5 to study at a UK institution. Thai participants (the listeners) were postgraduate students studying in the English as an International Language Programme at Chulalongkorn University in Thailand where English is the medium. Postgraduate students must have scored above 6 on IELTS to study in the programme. The researcher collected the data from Thai participants in Thailand whereas English NS and NNS participant data was collected at the University of York in the UK. NSs were asked to participate in the research through the purposive sampling method via an announcement of the research experiment on academic promotion networks. Regarding the group of NNSs and Thais, participants joined the research through a personal connection with the researcher on a voluntary basis.

3.7 Data Collection Process and Analysis Methods

For a more systematic and controlled data collection process, the data was collected from sub-groups of three based on convenience and L1 of the participants. The number of participants was not more than three per trial as the effectiveness of the experimental control was exposed in the pilot studies as being reduced when using higher numbers of participants. Other factors involved such as place, background noise, and procedure were controlled as the same for every participant.

To begin, the participants in each sub-group were informed about the purpose of the research, time consumed (approximately two hours), and asked for their consent (Appendix L: Participants Consent Letter). Following this, participants completed the first section of the questionnaire, which included personal background information. The second section, which included their subjective appraisal in terms of attitudes and intelligibility to the sample speeches, was completed at the final stage of the data collection process as the participants were required to listen to each speech sample and transcribe them first. Before undertaking any conditions of the experiment, the participants were intensively trained to use the respelling pronunciation system developed by the researcher. Thirty minutes were allowed for this session to ensure adequate understanding and to test their ability in use. Participant capability in use of the system was tested using ten words, participants transcribed the word after listening to its standard pronunciation and the transcriptions were checked by the researcher. Following a satisfactory return of test words but before the actual transcription began, participants were instructed a) to write down what they heard – to write every word item they felt certain about using orthographic transcription and were to revert to the pseudo transcription method only for the words they were not sure about and to indicate their reason from options given, b) to not correct any grammatical items found in the speech, and c) the speech would be played twice for orthographic transcription and twice for the specific problematic items for pseudo transcription, again they were not to go back and alter any words they had incorrectly

written. A short independent sample of Thai-accented English speech comprising four chunks of utterances was given to the participants as a trial of the data collection process. The researcher informed the participants that this was for familiarisation with the process and the use of the transcription form. The trial speech sample was played for the participants to transcribe. The familarisation process allowed for the experimental trials to run more smoothly and increased the reliability of the final data collected.

Following the familiarisation process, the experimental trials were conducted. The speech samples of Thai English pronunciation with different levels of Thai accent were played to the participants in a randomised order. Participants were to transcribe what they acoustically perceived. The recording was paused at the location of natural pause allowing for participants to transcribe the chunk of speech just heard. There was no time restriction imposed on the participants. Once all participants had completed the transcription task the next chunk of speech was played. Following completed transcription of the full speech, participants were asked to rate their attitudes towards the accent and perceived intelligibility on the 6-point Likert Scales. The researcher then moved on to the next condition.

Regarding the justification of playing speech sample twice rather than once, more reasons are explained in the section of Pilot Studies below. It has to be noted that; however, in the present study it was fully acknowledged that to achieve the best measure of intelligibility, responses should be taken from the very first instance of speech perception. As reported in Chapter 2, there are two main conflicting approaches employed in intelligibility testing: a) holistic/ impressionistic/ signal independent approach as found in the work of Frayer and Krasinski (1987), Win (1998), and Lu (2007) and b) analytic/ discrete/ signal dependent approach as found in the work of Munro and Derwing (1995a), Derwing and Munro (1997; 2001b) and Nejari *et al*. (2012). For the former, only subjective impressions of intelligibility, commonly called perceived intelligibility, towards the speech are collected throughout intelligibility measurement. The prevailing tool for

such measurement is the rating scale, alongside an assumption that there is no further improvement or interference to intelligibility beyond the overall scenario of impression towards the speech and accent. With this approach, the listeners are not required to demonstrate any informative intelligibility details regarding the tested speech, solely their subjective attitudes or feelings concerning speech intelligibility. Given the basic subjective requirements of the aforementioned approach, the tested speech can be played once only for intelligibility judgement.

Conversely, with the overarching aim of collecting more comprehensive and in depth details to aid intelligibility improvement and interference, the latter approach is adopted which requires the listeners to provide intelligibility information beyond holistic judgement. To explicate, after listening to the tested speech, the listeners are required to provide further details regarding intelligibility information with tools such as transcription and fill-in the blanks tasks. This information allows for analysis of problematic sound features, so-called mishearing analysis or features based analysis which is the main focus of this study. As illustrated in Chapter 2, in this approach, the transcription task is most frequently employed, and was therefore adopted as the instrument in this study. As can be seen, in transcription process, the transcribers or listeners are asked to write down what they believe they heard. In order to fulfil such transcription task, the listeners need to memorise the chunk of tested speech in order to write it down completely. This is in direct contrast to its counterpart, the holistic testing approach, which requires no form of memorisation.

This highlights a further consideration with regards to memory and the transcription task. As there is a desire to attain the most complete and accurate transcription possible, more time must be allocated to the test. Therefore, participants require more time to encounter the speech in order to fully perceive, memorise and write the speech chunk down. As reported in the pilot studies observation in 3.9.1, different L1 groups of listeners required a different number of exposures to the speech to write it down

effectively: NSs were capable of adequate transcription after one exposure, Thai participants required one or two exposures, and NNSs required upwards of three exposures. In reference to the current study, every effort was made to ensure the intelligibility data obtained via transcription was not affected by repetition of speech samples, while also allowing for adequate transcription task time. Thus, this study controlled the number of exposures to the speech sample, a maximum of two, based on the observations obtained from the pilot studies. Consideration is given to the potential for the second exposure to influence the transcription data, however, for the sake of transcription task completeness in the experiment, a willing compromise was made regarding number of exposures, provided there was a level of informed control.

3.8 Data Analysis

After the data was collected, all the transcriptions were coded as either accurate or error. In the analysis, only content words were considered while function words and bound morphemes such as inflectionals and derivationals were excluded from the analysis, due to the influence of the listeners L1. To elaborate, according to the results obtained from the pilot studies during the process of transcription task and the analysis of the data, the researcher clearly observed that the transcription process regarding syntax as well as grammatical functions was highly influenced by L1 of the participants: the influence of substrate grammar. More details on pilot studies will be detailed in a later section. Regardless of the emphasis placed on instruction, native speakers of English; for example, tended to automatically and subconsciously correct the speech with grammatical errors while NNSs, whose L1 has no articles and plural morphemes and tense morphemes in their syntactical system, tended to neglect articles a, an and the, and plural morphemes {-s}, tense morpheme {-ed}, {-s}, and {-ing} when transcribing regardless of how strong these features were pronounced in the speech samples. As a result, it was decided to exclude all grammatical elements including function words and inflectional morphemes from the analysis. For instance, the transcription of the word trying in the speech sample was

considered accurate as long as the root morpheme was presented. Therefore, tries, tried, or try were all deemed an accurate transcription under the assumption that the participants perceived correctly that which was intended to be conveyed, although, the grammatical units shown in the transcription were varied by means of their L1 influence. Regarding the pseudo-transcription, those phonetically compatible with the actual pronunciation of the intended speech were considered accurate: for example, [wiet][1] in white, [kros] in cross. The overall accurate transcription was tabulated and statistically analysed to obtain the actual level of intelligibility of each speech sample via the transcription performance of the participants.

In order to answer RQ 1 "To what extent is the level of Thai accentedness (weak, moderate, and strong) in English spontaneous speech associated with the intelligibility of the different groups the listeners as measured by the accuracy of their transcription of the tested speech?", the accurate transcription of matched words using orthographic transcription and phonetically compatible transcription from pseudo transcription (cinematic as [sinamatik]) of individual participants were counted and further processed in percentage to indicate how much each accent was understood by the participants. A two-way ANOVA, one-way ANOVA and multiple comparisons (Tukey HSD Post Hoc Test) were selected to process data to examine the association of the intelligibility scores in each condition and each group of participants.

RQ 2 looked at which specific pronunciation features of Thai English pronunciation tended to be the problematic features that impeded intelligibility to these groups of English listeners as measured by errors in transcription of the tested speech. It must be noted, however, that the primary focus of the research was not a phonological investigation. The object of this study was to understand the effect of foreign accentedness in English (Thai accent) on intelligibility to different L1 listeners and the implications for English language teaching. The errors in transcription – omission and substitution of novel

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[1][xxx] represents pseudo-transcription data.

words from orthographic transcription and phonetically incompatible transcription from pseudo transcription indicated what sound features in the speech resulted in more problems for the participants - how the sounds pronounced by Thai speakers were perceived by the participants and deviated from what was targeted by the speakers. Hardman's (2010) data analysis method for phonetic analysis was employed to investigate the problematic sound features. As such, errors in transcription that occurred in over 50% of transcriptions were further analysed for their phonological components to identify error patterns that led to an intelligibility breakdown. Segmentals of these words were labelled as consonant, and vowel. The pronunciation of these sounds in the speech sample was evaluated by the researcher to identify the error. Through comparison with the reference standard English pronunciation of the Carnegie Mellon Pronunciation Dictionary and the Longman Pronunciation Dictionary, if it was discovered that the pronunciation of the consonant (initial/ final/ cluster) of that word did not conform to the standard pronunciation and caused transcription error, the consonantal sounds and their position in the word were noted. Every problematic phonological feature was categorised in terms of what sounds resulted in intelligibility failure. The error transcription, omission and substitution with novel words, was analysed in terms of how the actual pronunciation of the speaker differed from the standard pronunciation. How much the sounds transcribed by the participants deviated from the targeted sounds of the speakers was analysed from error in the category of phonetically incompatible only.

To answer RQ 3, "To what extent are factors such as attitudes, familiarity to international accents of English, and perceived intelligibility, as measured by a 6-point Likert scale, associated to intelligibility performance?", the data collected from the subjective methods was used to investigate the relationship between intelligibility and transcription performance of the participants using correlational analysis. It was hypothesised that these three items would have a positive correlation with the intelligibility scores, albeit with different degrees of strength. For example, those who scored high on

the intelligibility task would have reported positive attitudes towards the accent, considerable familiarity to international accents of English, and high report on perceived intelligibility level. Conversely, those who scored low in intelligibility would have reported the opposite. The data was processed by correlation coefficient analysis: Spearman's Rho, due to the presence of ordinal variables.

3.9 Pilot Studies

3.9.1 Data Collection

To improve the quality of research instruments and the data collection process, three pilot studies were conducted. Each pilot study consisted of six participants ($n = 6$) (two from each L1 group of listeners), the participants in the pilot studies were excluded from participation in the main research. For the first two pilot studies, all six participants were gathered together at the same time and place to participate in the research whereas, for the third study, they participated in the experiment individually. For all three pilot studies, the same initial procedure was adhered to, as follows: after building rapport, the participants were informed of the purpose of the study and asked to read and sign a consent form. The transcription tasks, as well as the instructions and all parts of the questionnaire, were shown and explained in detail. Participants were advised they could raise questions and withdraw at any time. The intensive training on the respelling pronunciation system was provided for 30 minutes. Once participants completed the questionnaire the transcription process began.

For the transcription task, in the first and second pilot study, the participants were provided with plain paper to transcribe what they acoustically perceived. In addition, in the first pilot study, the internal pause of the speech samples was syntactically assigned, and each speech sample was played once in each condition. Results demonstrated that all participants failed to transcribe the speech samples and required longer than expected time to complete each transcription. Therefore, pausing location was adapted by looking at the

natural pausing location of the speech, or intonation phase, and this was used in the second pilot study, plain paper was still given to participants in this study. Results from both pilot studies raised an issue surrounding the instrument used for transcription (plain paper). Consequently, as the data was not provided in a systematic fashion, data analysis was challenging and laborious, the ramifications of which was the development of a transcription form. The form was divided into sections for transcription per the internal chunk of speech through the natural pause. The transcription form was shown to help facilitate participants in writing the utterances down systematically and resulted in easier analysis of the data for the researcher. In each condition in second pilot study, the speech sample was played once with a pause every three seconds, on average, according to the natural pause. The participants were allowed to finish writing what was acoustically perceived, and once there was consensus to move on the next chunk was played. The attitudes survey was only run in the first and third pilot study. The attitudes survey was not tested in the second pilot study as it was established that the questionnaire was satisfactory, elicited the data expected and participants had no difficulties in dealing with any items. The volume and the clarity of the recordings played were demonstrated effective for the participants to hear without difficulty. Throughout the data collection process in the pilot studies, the recordings were played to the participants in order, from weakest to strongest accent. After the process was finished and the data obtained was roughly analysed, the researcher found that it would be more effective to play the recording to the participants with a mixed level of accent rather than sequentially. This was because in the later recordings (no. two and no. three, which are stronger in accent), the participants tended to show more problems in understanding (transcribing) than in the first recording which had the weakest accent. To be sure that the problems in transcribing were due to the issue of accent rather participant fatigue, it was decided that the conditions were to be randomised for the main trials.

The final pilot study involved six participants ($n = 6$) (two from each L1 group of listeners) who joined the data collection process individually. Results of the final pilot study, in which the researcher interacted with the participants on a one to one basis, highlighted that participants required considerably different times to transcribe the speech. To illustrate, NSs and Thais could perform orthographic transcription after listening to the speech once and only needed to listen to the problematic words for pseudo transcription once more. However, NNSs (non-Thai) required more than three plays to perceive the speech for orthographic transcription and pseudo transcription, and were found to struggle with the transcription far more than NSs and Thais did. In addition, performing the task with an individual participant was found more effective as the researcher could encourage each participant to write down the string of sounds they acoustically perceived in the problematic word rather than omitting it right away. As each pilot study was developed based on the results obtained from the previous study, Table 3.3 gives an overview of each pilot study conducted.

Table 3.3

Details of the Experiments in Three Pilot Studies

Pilot Study	No. of Listeners	Data Collection Session	Pausing Location	Transcription Task	Application of Spelling pronunciation System	Data Analysis	Questionnaire
1	6	Group of 6	Syntactical Focused	Plain paper	Yes	-	Yes
2	6	Group of 6	Natural Pause	Plain Paper	Yes	-	No
3	6	Individually	Natural Pause	Developed Form	Yes	Percentage Correlation	Yes

Given the insights gained from the three pilot studies, necessary adjustments were made to the instruments and methods used, these were; participants were to participate at a

maximum of three listeners per session, the speech samples were limited to being played twice for orthographic transcription and twice for pseudo transcription, specifically the problematic words. Finally, conditions were to be randomised rather than moving sequentially from weakest to strongest Thai accent.

3.9.2 Data Analysis and Overall Results

Although the data was collected across three pilot studies, only the data from the third pilot study was formally analysed to answer research questions in the part of transcription task (RQ.1 and RQ.2), and the data for RQ.3 was taken from the first pilot study depending on the completeness of data collected in each pilot study. After analysing the transcription tasks from six participants towards three levels of accentedness of Thai English (weak, moderate, and strong), the raw data was coded as intelligible and unintelligible which was adopted as the frame of analysis in the main study.

Concerning intelligible sounds, the orthographic transcription was classified as the words that were exactly matched to the targeted words from the speakers, as well as the words that semantically matched the original words but were transcribed slightly differently in terms of grammatical morphemes such as {–ing}, {-s}, {-ed}, which is the phenomenon called regularisation, as influenced by the first language of the participants and commonly found in interlanguage process. To illustrate, from the pilot studies, the researcher observed that during transcribing an utterance of connected speech, participants' L1 played a crucial role. In order to perform the transcription, which needed to be done as soon as the speech was paused and before the memory was lost, the participants tended to immediately perceive the speech based on their own languages syntactical pattern. For example, no matter how strongly the instructions of the transcription task were emphasised, NSs always unconsciously corrected the incorrect words in the speech such as adding {-ing} or deleting {–ing} as appropriate to the syntactical structure of English language. For some NNSs and Thais, participants tended to omit grammatical lexemes such as plural morpheme {-s} and tense morpheme {-ed}, as per their L1, where plurality

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and tense do not exist in the language system (data gained from an informal talk with the participants). In such cases, these anomalies of transcription, though not perfectly matched to the utterances such as try – trying, films – film were classed as intelligible as the meaning of the main content and sound string of the utterance was not much altered. Such classification was only made after referring to the pronunciation of the speaker if it was obvious that the speaker pronounced these words clearly and the researcher was certain that the results of such transcription were due to the L1 influence of the participants. Intelligible pseudo transcription was defined as the classification of sounds that the transcribers could spell correctly even though the pronunciation was unclear to them. This meant the pronunciation they perceived was matched to the actual pronunciation of the targeted word like the example of cross, which was classified as intelligible if the pseudo transcription was [kros].

Unintelligible transcriptions were categorised as a) omission or what participants left blank in the transcription, b) substitution of novel words, which means the participants used words that had no phonetic or semantic relevance to the targeted word such as dressing as something, and management as Manchester, and c) substitution of words that were partially phonetically similar to the targeted words but were too much deviated from the targeted word such as management as minute main. Similarly, pseudo transcription was coded as unintelligible when the participants transcribed sounds that a) had a completely different pronunciation such as lesbianism as [menistuh] and b) substitution of sound strings that were partially phonetically similar to the targeted words but contained sound features that were too far deviated from the targeted words such as probably as [pronigayt].

In order to answer RQ1; the association between intelligibility of different levels of Thai-accent to varied L1 listeners, and RQ 2; the problematic sound features causing intelligibility failure among the participants, transcription task was the instrument employed and the data obtained from pilot studies can be shown as follows.

3.9.2.1 Association of different levels of accent to different groups of listeners.

Through analysis of accurate transcriptions (exactly matched words from orthographic transcription and phonetically compatible pseudo transcription), although a significant negative effect of accentedness to the overall intelligibility scores of the participants was not discovered, different levels of Thai accentedness in English pronunciation did have an impact on the intelligibility of various groups of English users. English native speakers (NSs) scored highest on the transcription tasks in the weak accent, followed by moderate and strong Thai accent pronunciations respectively. While among the three groups of participants, non-native speakers (Non-Thai) scored the lowest in all conditions and Thai listeners performed the best in the strongest accent condition. In addition, scores were found to be lower than 50% but not lower than 40% for non-native speakers of English at the level of moderate and strong Thai accent.

The results indicated a negative correlation between level of accent and intelligibility for NSs and NNSs, the lower the level of Thai accent in English pronunciation the higher the rate of intelligibility. Whereas for non-native speakers with L1 of Thai, a positive correlation was shown, the stronger the Thai accent in English pronunciation was, the more intelligible it was. The data from the pilot studies was processed through descriptive statistics (percentage) to establish if there was a general trend between the association of the two factors and the quality of the instrument used. The data from the main study was further processed through referential statistic: two-way ANOVA, to further examine details of findings regarding the statistical significance of the association found.

3.9.2.2 Problematic sound features. The errors chosen for the phonetic analysis were the words that more than 50% of the participants incorrectly transcribed using orthographic and pseudo transcription. From the transcriptions, when looking at the frequency of errors regarding the weak Thai accent, there were no words that more than 50% of the participants had problems transcribing, however, the moderate and strong Thai

accents contained transcription errors by more than 50% of participants. Those errors were then further phonetically analysed and compared to the reference standard pronunciation (CMU Pronunciation Dictionary and Longman Pronunciation Dictionary). The core problematic sound features are summarised as follows. Regarding the consonants, it was found that intelligibility failed at the pronunciation of voiced as voiceless such as [dʒ] as [ʃ], [z] as [s], [v] as [w], and [θ] as [t], the lack of unreleased final consonants as [r], [t], [k], etc., and the failure to produce some clusters such as [dr] as [dʷ], [fr] as [f], etc. In vowels, most of the unintelligibility was found on monophthongization [əʊ] as [ɔ], and lack of reduced vowels: [ə] was always fully pronounced as [e], [a], or [ɔ], and a heightened position of the vowels.

The general findings, in relation to the problematic features common to Thai English pronunciation, were consistent with those found in the literature of Thai and English comparative studies e.g. Luksaneeyanawin (2005), and Kanokpermpoon (2007). Some features were not mentioned in Jenkins (2000) LFC such as the substitution of [θ] with [t], whereas the lack of final released consonants echoed the works of other EIL pronunciation scholars such as Kirkpatrick (2007). Other features were innovatively found in this work, such as the heightened position of the vowels (vowel quality). Thus, it was demonstrated that the speech samples constructed and the perception of sounds among the participants were indicative of the differences in intelligibility between each level of accent, as well as problematic sound features of Thai English pronunciation, through the analysis method framed. Therefore, the constructed materials were considered valid to employ in the main study.

3.9.2.3 Intelligibility predictors measured from the rating methods. The initial quantitative analysis (correlation coefficient analysis: Spearman's Rho) used the data collected from the third study (*n* = 6) and highlighted a relationship between other possible intelligibility indicators such as attitudes, familiarity to international accents of English and perceived intelligibility.

Regarding the relationship between participants' attitudes towards the accents and intelligibility level, no significant correlation was displayed. In other words, the attitudes of the listeners did not vary through intelligibility level. However, only six participants took part in the study, so the statistical value obtained was considered unreliable. Larger samples would be needed to confirm the statistical result.

As for the item of familiarity to international accents of English, there was a positive linear correlation between intelligibility scores and familiarity (r_s = 0.878, p = .02). Therefore, scores from the transcription task correlated with familiarity to international accents of English as rated by the participants. To elaborate, those having high scores tended to rate themselves as possessing a high level of familiarity to international accents of English.

As for perceived intelligibility and actual intelligibility scores, there was no significant correlation shown. Further research and larger samples are needed to confirm the results.

3.10 Main Data Collection Procedure

Thai participants were the first group to take part in data collection. Fifteen Thai participants undertaking a doctoral study in an English as an International Language Programme at Chulalongkorn University in Thailand volunteered to participate the research. They were classified into five groups of three based on their availability. The experiment was conducted at the Centre for Research in Speech and Language Processing, Chulalongkorn University. Data collection for NS and NNS participants took place in the UK. Like Thai listeners, NSs and NNSs were classified through their L1 and availability into groups of three. All experimental sessions in the UK were conducted in a meeting room at the University of York and the participants were postgraduate students from various departments in the university. According to the informal talk at the initial part of the experiment, none of the participants knew or had prior contact with the speakers of the speech samples. The speech samples were played to the participants with the use of

speakers. The use of headphones was not permitted to allow for a more authentic setting of communication.   The procedure echoed that used in the pilot studies, starting from building rapport, explaining the purposes of the research and seeking consent in participation.   Participants were then intensively trained in the pronunciation respelling system, completed the first part of the questionnaire which included personal background information and the familiarity to international accents of English rating. Participants then took part in the main experiment and performed the transcription tasks with the provided form for each condition, which was randomly played to each group. Each chunk of speech was played twice, and the problematic words for performing pseudo transcription were played twice more only upon request.   The listeners were advised they could not go back and correct anything that was written already.   There was no time limitation on transcription.   At the end of the transcription, participants rated their attitudes and perceived intelligibility to that speech sample on the second section of the questionnaire. After each condition was completed a five to ten-minute break was given to avoid fatigue. The data from the transcription tasks were coded for intelligible and unintelligible categories first. The intelligible words were processed in percentage and through a one-way and two-way ANOVA to examine the association of intelligibility in different level of accentedness and different participant groups. The unintelligible words that more than 50% of the listeners failed to accurately transcribe as pronounced were phonetically analysed by comparison between actual pronunciation of the speakers and the reference standard pronunciation (Carnegie Mellon Pronunciation Dictionary and Longman Pronunciation Dictionary). Finally, the deviation between the features spoken and perceived was assessed in order to establish the segmental features that resulted in higher instances of intelligibility failure. The data from the questionnaire related to attitudes, familiarity to international accent of English, and perceived intelligibility in relation to intelligibility scores was statistically processed to establish the association between the factors with correlation coefficient: Spearman Rho's.

3.11 Summary

This research investigated the intelligibility of Thai English pronunciation with different levels of accent to different groups of English listeners including 15 English native speakers (NSs), 15 non-native speakers (NNSs) who were non-Thai, and 15 Thai speakers. The main exploration of the research was to examine the extent the different levels of Thai accentedness in English pronunciation were associated with intelligibility of different groups of listeners, what were the main pronunciation features in Thai English that were problematic to the level of intelligibility of these different groups of listeners, and the examination of other possible intelligibility indicators such as attitudes, familiarity to international accents of English, and perceived intelligibility. This research was a quasi-experimental design with counterbalancing which used transcription tasks and questionnaires as the instruments. Connected spontaneous Thai English speech samples were used as the stimuli for the research and were categorised into three levels of Thai accentedness from weak, through moderate to strong, as judged by trained phoneticians and native speakers of English.

With the analysis of the accurate transcriptions from the pilot studies, it was established that different levels of Thai accentedness in English speech did not significantly affect the speakers' level of intelligibility to these different groups of listeners. Overall NSs and NNSs can understand Thai English speech across varying levels of accentedness. However, NNSs were shown to have the lowest transcription accuracy of all groups of participants. Through analysis of errors in transcription, it was also found that segmentals that do not exist in Thai speech sounds such as the pronunciation of the final consonant and certain voiced fricative sounds affected the intelligibility level of Thai English pronunciation to the listeners.

As stated in the literature, intelligibility should be examined alongside social connotations such as attitudes. In addition, the reliability of intelligibility as gained from subjective methods, ratings, was worth comparing to the data from objective instruments

such as transcription tasks. The three possible indicators for intelligibility, as measured through rating methods, studied in this research were attitudes, familiarity to international accents of English, and perceived intelligibility. The pilot studies indicated that familiarity towards international accents of English was positively correlated to intelligibility scores, while the results, however, were converse for the factors of attitudes and perceived intelligibility.

CHAPTER 4

DATA ANALYSIS AND RESULTS

4.1 Introduction

The previous chapter provided a critical examination of the detailed methodology, data analysis methods, and pilot studies of the research. This chapter presents the results obtained from the analysis. To what extent the different levels of Thai accentedness (weak, moderate, and strong) in English pronunciation was intelligible to different groups of participants: English native speakers (NSs, $n = 15$), English non-native speakers whose L1 was not Thai (NNSs, $n = 15$), and Thai native speakers (Thais, $n = 15$), was the primary focus of the study. Furthermore, the current study aimed to identify the problematic non-standard sound features in Thai English pronunciation that resulted in intelligibility failure, focusing on segmental features. These variables, level of accent and problematic sound features were considered a result of the discrepancies between standard English and Thai-accented speech. In addition, supplementary contributors to intelligibility were considered in relation to the participants' perceptions; such as attitudes, report on familiarity to international accents of English and reports on perceived intelligibility level of the speeches, thus, allowing for an exploration of the relationship between reported measures and actual intelligibility. There were two instruments employed in this study – a transcription task and an attitudes survey. The transcription task utilised both orthographic and pseudo transcription to determine intelligibility levels. Following completion of the transcription task in each condition, participants were provided with a questionnaire regarding attitudes towards and report on intelligibility of that condition.

4.2 Analysis and Results of Research Question No.1

The question of RQ 1 is: To what extent is the level of Thai accentedness (weak, moderate, and strong) in spontaneous English speech associated with intelligibility level of the following groups of listeners as measured by the accuracy of their transcription of the speech stimuli?

a) Native speakers of English (NSs)

b) Non-native speakers of English with non-Thai L1 (NNSs)

- Arabic, Chinese, Japanese, Spanish, and Portuguese (each 3 listeners)

c) Non-native speakers of English with Thai L1 (Thais)

4.2.1 Data Analysis and Results

The data from accurate transcriptions both in orthographic and pseudo transcription were analysed to determine the percentage accuracy. Overall 157 content words were used in the analysis (59 words from the weak accent, 51 words from the moderate accent, and 47 words from the strong accent). Results from the descriptive statistics demonstrated the overall level of intelligibility across conditions was higher than 60% which indicates that Thai-accented English pronunciation across all levels of accent can be considered intelligible to global English users.

The accurate transcription data was further analysed through inferential statistics in order to establish how different levels of accent were associated to speech intelligibility to the different participant groups. The analysis was conducted through three lenses 1) how different levels of Thai English accent (weak, moderate, and strong) affected the intelligibility of the Thai speakers to the different groups of participants (NSs, NNSs, and Thais), 2) regardless of the classification of groups of participants, for overall global EIL listeners, how different levels of Thai-English accent affected intelligibility, and 3) regardless of the classification of level of accent, for each group of participants, how Thai-English accent in general affected the speakers level of intelligibility. The descriptive statistic data of the differences in mean scores of each group of listeners through each level of accent.

Table 4.1

The Summary Output of Effect of Different Levels of Thai-accentedness in English Pronunciation on the Intelligibility Scores of Different L1 Groups of Listeners

Accents	Group of Listeners	*n*	Mean	Std. Deviation
	NSs	15	90.93	4.06
	NNSs	15	83.73	6.08
Weak	Thais	15	90.73	4.77
	Total	45	88.47	5.97
	NSs	15	92.00	5.71
	NNSs	15	77.07	8.49
Moderate	Thais	15	86.67	5.16
	Total	45	85.24	8.99
	NSs	15	72.20	3.21
	NNSs	15	63.20	6.40
Strong	Thais	15	94.73	3.21
	Total	45	76.71	14.12

The details of the results obtained in each part of Research Question No.1 can be presented as followed.

4.2.1.1 Effect of Thai accent intelligibility across overall listener groups. To investigate the effect of each different level of Thai accent across listener groups, holistically viewed as the global English users regardless of the classification of L1, a repeated measures ANOVA was conducted. The results demonstrate that there was a

statistically significant effect of different levels of accent across listener groups (F (2,88) = 24.25, p < .001) (Appendix M: Table M1).

Through pairwise comparison (Appendix M: Table M2), the higher mean score in the weak accent (M = 88.47, SD = 5.97) than the moderate accent (M = 85.24, SD = 8.99) and strong accent (M = 76.71, SD = 14.12) was revealed as statistically significantly different (p = .02, and p < .001, respectively). When looking at the results overall the trend shows a detriment to intelligibility as level of accent increased.

4.2.1.2 Effect of overall Thai accent on intelligibility across listener groups. On the contrary to the previous analysis, to ascertain the overall level of intelligibility of Thai-accented speech in general to each different group of listeners, regardless of level of accent, the overall scores for each level of accent were combined. The combined scores were then analysed in reference to each participant group. The data was processed by one-way ANOVA. The results revealed a significant result among intelligibility scores obtained for each group of participants (F (2,42) = 65.11, p < .001) (Appendix M: Table M3).

Post Hoc Analysis (Multiple Comparison: Tukey HSD) confirmed that the mean difference was indeed significant as follows; regardless of the level of accent, NSs performed better than NNSs (p < .001), but lower than Thais (p < .001) and NNSs performed lower than Thais (p < .001) (Appendix M: Table M4).

The results indicated that Thai-English pronunciation was most difficult to comprehend by NNSs, followed by NSs and Thais respectively. This implies that there must be higher awareness of English pronunciation when Thai people communicate with NNSs over the other groups of listeners.

4.2.1.3 Effect of Thai-accent and different L1 groups of listeners on intelligibility. This following section moves to a more specific analysis: the interaction of different levels of accent and different L1 groups of listeners on intelligibility. As the intelligibility scores obtained across the level of accents and L1 groups of listeners were

approximately normally distributed, a mixed between-within subjects ANOVA was used to investigate the interaction of different level of accents and different L1 groups of listeners on intelligibility. A significant main effect of accent was obtained, $F(2,84) = 75.52$, $p <$ .001, $\eta_p^2 = .64$ as well as a significant main effect of L1 group of listeners, $F(2,42) =$ 65.11, $p < .001$, $\eta_p^2 = .76$. Also, a significant interaction between accent and L1 groups of listeners was reported, $F(4,84) = 47.52$, $p < .001$, $\eta_p^2 = .69$ (Appendix M: Table M5, Table M6, and Table M7).

Post hoc analysis (Tukey HSD) and the examination of the means indicated that in the weak accent condition, the mean score for NSs ($M = 90.93$, $SD = 4.06$) was shown to be higher than NNSs ($M = 83.73$, $SD = 6.08$), at a significant level ($p < .001$) and the mean score for NNSs that was lower than mean score for Thai participants ($M = 90.73$, $SD = 4.77$) at a significant level ($p < .001$). However, the difference in mean score for NSs and Thais' was not observed as significantly different in the weak accent condition ($p = .99$). The results indicated that in the weak accent condition, for NSs and Thai participants accent did not impede intelligibility, while NNSs encountered more problems in comprehension of the speech (Appendix M: Table M8 and Table M9).

When considering the moderate accent condition, the results demonstrated that NSs mean score ($M = 92.00$, $SD = 5.71$) was different and higher than NNSs mean score ($M = 77.07$, $SD = 8.49$) at a significant level ($p < .001$). Furthermore, NNSs mean score was lower than Thais ($M = 86.67$, $SD = 5.16$) at a significant level as well ($p < .001$). However, though exhibiting a higher mean score than NNSs, there was no significant difference observed between NSs and Thai participants ($p = .08$) (Appendix M: Table M10 and Table M11). In sum, the results demonstrated that a moderate Thai was most intelligible to NSs, followed by Thais then NNSs. While Thais mean score was slightly lower than that of NSs the difference was not significant and thus the effects of accent were disputable in this respect. As previously highlighted, in the moderate accent condition NNS scores were the lowest to a significant level when compared to both NSs

and Thais, which indicated that a moderate level of accent was a significant impediment to the intelligibility of the speech.

As for the strong Thai accent condition, it was revealed that Thais mean score (M = 94.73, SD = 3.21) was higher than NSs mean score (M = 72.20, SD = 3.21) at a signitificant level ($p < .001$) and NNSs mean score (M = 63.20, SD = 6.40) at a significant level ($p < .001$). Also, NSs mean score was significantly higher than the NNSs mean score ($p < .001$) (Appendix M: Table M12 and Table M13). The results imply that among the three levels of accent, the strongest accent was the most problematic for international English participants. The results were considered a result of the constraints imposed by the ingrained L1 phonological mechanisms involved in the perception of sound.

Taking the different strand, the examination of the means and pairwise comparison indicated that NSs' intelligibility mean score for the weak accent (M = 90.93, SD = 4.06) was significantly higher than the mean score for strong accent (M = 72.20, SD = 3.21) ($p < .001$) and the mean score for the moderate accent (M = 92.00, SD = 5.71) was also significantly higher than the score for the strong accent ($p < .001$) (Appendix M: Table M14 and Table M15). However, there was no significant difference reported between the mean scores for the weak and moderate accent, ($p = .53$). Therefore, the differences between the weak and moderate accent conditions were considered minimal for NSs. However, when comparisons were made to the strong accent both demonstrated a significant result which indicates that a strong level of accent is a predictor for a decrement in intelligibility in communication with NSs.

In NNSs results, the mean score for the weak accent (M = 83.73, SD = 6.08) was higher than the mean score for moderate accent (M = 77.07, SD = 8.49) to a significant level ($p = .01$), and than the mean score for the strong accent (M = 63.20, SD = 6.40) at a significant level as well ($p < .001$). In addition, the mean score for the moderate accent was also significantly higher than the strong accent ($p < .001$) (Appendix M: Table M16

and Table M17). This further gives credence to the adverse effect of strong accent on intelligibility in communication with NNSs.

Regarding Thai participants' intelligibility scores, it was revealed that the intelligibility scores were significantly different through each level of accent: weak accent mean score ($M = 90.73$, $SD = 4.77$) was higher than the moderate accent mean score ($M = 86.67$, $SD = 5.16$) at a significant level ($p = .02$), the weak accent mean score was statistically lower than the strong accent mean score ($M = 94.73$, $SD = 3.21$) at a significant level ($p = .02$), and the moderate accent mean score was significantly lower than the strong accent mean score ($p < .001$) (Appendix M: Table M18 and Table M19). The results clearly imply that a strong Thai accent was easiest for Thai participants to understand, in contrast to the results found for NSs and NNSs.

Therefore, the data in this section demonstrates that the intelligibility was indeed varied through the level of accent in the speech. Consequently, level of accent was demonstrated as a significant predictor of intelligibility failure, especially for NNS participants; whose L1 was neither English or Thai. The analysis substantiates this claim with NNSs exhibiting highest scores in the weak accent condition with a statistically significant reduction in as the strength of accent increased. For NS and Thai participants, the effect of accent on intelligibility between the strong and weak accent was inverse. For Thai participants, a stronger accent resulted in higher increased intelligibility of the speech which was converse to that of NSs where intelligibility was highest when the accent was weakest. However, a moderate accent did not provide any significant results between Thai and NS participants unlike the results obtained for NNSs. An interesting result obtained in the research, which was not anticipated, related to NS scores in the moderate accent condition. From the outset of the study, for NSs, it was assumed that intelligibility would be affected by level of foreign accent only, however, although not statistically significant the moderate accent scores were higher than the weak accent scores.

4.2.2 Conclusion for Research Question No. 1

Given the results obtained from the analysis of level of accent by participant group, a clear trend can be observed in intelligibility of the speech to both NSs and NNSs that as the level of accent increased intelligibility decreased. Conversely, for Thai participants' speaker intelligibility increased as level of accent increased. These core results strongly echoed the advantages of shared-L1 that due to the higher number of matched pronunciation features with Thai L1 participants the intelligibility possessed by the speaker increased and this occurred at a statistically significant level. However, the difference in the level of intelligibility between the weak accent and moderate accent conditions was not statistically significant for NS and the overall group of listeners, while for NNS and Thai participants the difference in level of intelligibility was statistically significant between each level of accent. This reflected that the advantage of nativeness, though displaying a helpful role for accented speech intelligibility for NSs, was not considered as significant a factor as shared-L1 benefits. In addition, though the higher in mean scores of NSs in the moderate Thai accent was not statistically significant, NSs' mental lexicon acted as an aid in the perception of accented speech when technical and common terms were involved. When the results were analysed for overall global listeners by combining each participant groups scores in each level of accent, it was demonstrated that the weak Thai accent was most intelligible, followed by moderate and strong respectively. This implies that, on the global communication stage, it is undeniable that the reduction of accent helps facilitate international intelligibility.

4.3 Analysis and Results of Research Question No.2

Which specific pronunciation features of Thai English tend to be problematic features for intelligibility to these groups of English listeners, as measured by the errors in their transcription of the speech samples?

It is important to note that a phonological investigation of Thai-accented English speech was not the primary objective of this study. The focus of this research was to

understand the effect of foreign accentedness in English (Thai accent) on intelligibility and the implications for English language teaching. This research question was aimed at an identification of the phonological instances of Thai-accented English that resulted in intelligibility failure.

4.3.1 Data Analysis and Results

Regarding measuring intelligibility failure, as mentioned in RQ1, there was a total of 157 content words used in the analyses. Examination of the errors in transcription found eight words that were mistranscribed by more than 50% of participants from all groups. These eight words were those that were failed to be recognised as spoken in the first instance of transcription. To elaborate, within the three speech samples, there were certain words that were uttered more than once such as probably, cinematic and management. The analysis of the transcription focused on the words that were errored in the first instance of pronunciation, on the assumption that intelligibility, especially in pronunciation, must occur with the first occurrence of listening to/receiving that pronunciation. A more accurate or alternate transcription that occurred later, when the words were repeatedly uttered may have resulted from other factors such as predictability with more content knowledge, or idiolect familiarity. Hence, in order to analyse the problematic sound features that led to intelligibility failure for RQ2, only errors in the transcription of the words that were pronounced for the first time were taken into account. Of the entire 157 words, there were eight words determined as problematic in the first instance of the listening which was 5.1% of the total words. Of these eight words, two words were found phonetically unintelligible for all groups of listeners and were *probably* from the weak accent condition and *lesbianism* from the moderate accent condition. Five words were found unintelligible specifically for NSs and NNSs; namely, *genre* from the moderate accent condition and *hypothesis, environmental, management,* and *design* from the strong accent condition. Only one word was identified as unintelligible for NNSs and Thais which was *dressing* from the moderate accent condition. The relatively low amount

of mistranscribed words from the current study indicates that, in general, Thai-English pronunciation can be considered intelligible for global listeners. However, even though the number of errors found was minimal, the problematic sound features which comprised those words leading to intelligibility failure were consistent and the trend is drawn out and analysed as the results of RQ2.

Each problematic word from the Thai-English speech samples was phonetically transcribed by the researcher and a trained phonetician. With the use of PRAAT 6.0.21 software for spectral analysis and segmenting features in the syllables of these words, a careful examination of the single sound, transition and whole word was conducted for the most precise documentation of the phonetic transcription. All transcriptions of the problematic words were then analysed for the non-standard pronunciation features which led to intelligibility failure by comparison to the standard pronunciation reference from Carnegie Mellon Pronouncing Dictionary (American English: AmE): CMU, and Longman Pronunciation Dictionary (British English: BrE and American English: AmE). This investigation was to determine the Thai-accented English pronunciation features (T-E) that were pronounced differently from the standard pronunciation. Whether these features should be claimed as variants or errors when compared with the selected guidelines of NS pronunciation, led to the development of the list of non-standard sound features used by Thai speakers in the study.

Only the sound features that were mistranscribed from the targeted word were taken forward for analysis and those sound features transcribed as targeted by the speakers were disregarded. For example, in the word probably, the orthographic transcription in the form of substitution with the use of promptly indicated that the listeners perceived the initial cluster [pr] accurately, as targeted by the speaker, but the problems arose in other features as [b], [a], and the perception of [m]. Hence, cluster [pr], was not a problematic sound feature in this case. While, from pseudo transcription of this same word, if the participants transcribed it as [promli] it further verified that the participants had no

difficulty in perceiving the initial cluster [pr]. Therefore, cluster [pr] was omitted from further analysis. The additional sound features that were mistranscribed from the targeted pronunciation were then analysed by comparison to the pronunciation references.

The rationale for selecting the CMU dictionary for the pronunciation reference was that the pronunciation data provided in the dictionary was collected from authentic speech (Kominek & Black, 2004). In addition, in the context of Thai pronunciation, there has been a higher level of exposure to American English than British English, especially through the media - films and advertisement (Huebner, 2006). However, using one finite dictionary was not considered sufficient for reliability in assessment of whether a sound feature was, in fact, pronounced the same across English L1. Therefore, the use of the Longman Pronunciation Dictionary which includes both American (AmE) and British (BrE) pronunciation was implemented alongside the CMU to increase the reliability of pronunciation assessments. This does not imply that the researcher considered the pronunciation presented in the selected dictionaries the best or most accurate way of pronouncing English, but rather, a NS reference was required to ascertain the non-standard sound features which led to intelligibility failure. The pronunciation guidelines chosen for use in this study were underpinned by this premise.

Each error identified in the transcription of individual participants was analytically compared to the standard pronunciation reference and the pronunciation in the speech samples. This was to identify how each sound was perceived and failed to be recognised by determining the major variants in the way the sounds were comprehended. The problematic sound features obtained can be divided into two main categories: a) non-standard sound features (mispronunciation from the speaker once compared with standard pronunciation) that led to intelligibility failure of the listeners, and b) standard features (accurate pronunciation from the speaker once compared with standard pronunciation – in terms of segmental features) that still led to intelligibility failure. It must be noted that for the latter, regardless of how the sounds were perceived by the listeners, no sound features

were analysed because the primary focus of the research related to how Thai-accented English pronunciation leads to international intelligibility failure. Therefore, only non-standard features that were pronounced differently from the standard pronunciation and resulted in intelligibility failure were taken to the analysis.

4.3.1.1 Problematic Words from More Than Half of Overall Listeners (*n >* 22). Table 4.2 below illustrates the problematic words inaccurately transcribed by more than 50% of the overall listeners as per their L1 – of the total number of listeners as 45, words that more than 22 listeners mistranscribed from the targeted words of the speakers.

Table 4.2

Problematic Words from Majority of the Listeners

Words	Level of Accent	NSs (*n* = 15)	NNSs (*n* = 15)	Thais (*n* = 15)	Total No. of Listeners Mistranscribing (*n* = 45)
Probably	Weak	12	11	12	35
Dressing		-	11	12	23
Genre	Moderate	12	15	-	27
Lesbianism		15	14	13	42
Hypothesis		11	13	-	24
Environmental		15	15	-	30
Management	Strong	15	15	-	30
Design		15	15	-	30

A critical analysis of each problematic sound feature, mistranscribed by the majority of listeners was conducted through comparison to the standard reference pronunciation and actual pronunciation of the speaker. Summaries of the identified features are shown in Tables 4.3 – 4.10.

4.3.1.2 Construction of Reporting Tables. Summaries of the identified problematic features are shown in Tables 4.3 – 4.10. In the rows of "**Standard Pronunciation**", the phonetic data is the pronunciation of the word as described in the Carnegie Mellon Pronunciation Dictionary (CMU: American English only) and the

Longman Pronunciation Dictionary (British English: BrE and American English: AmE). The Thai English pronunciation of the speaker is referenced in the row titled "**Speech Sample Transcription**" and is represented as T-E in the Tables. To explicate, in their connected spontaneous speech, the pronunciation of the problematic words as reflected from the transcription task of the listeners was further phonetically transcribed by the researcher and another two phoneticians in order to compare it with the pronunciation described in the references and the transcription from the listeners. Lastly, per each group of listeners, the transcription is provided in the rows of "**Trend of Transcription**". The phonetic data provided in these rows was the **main trend** of the transcription data obtained through each listener group, from both orthographic and pseudo-transcription, that were phonetically compatible to the targeted words. These sound features were converted to IPA symbols by the researcher as illustrated in the Tables for the systematic phonetic analysis (Appendix N: Transcription of Most Frequebtly Found Problematic Words). Those features perceived accurately as targeted by the speakers are marked with ✔ and the features that deviated too far from the pronunciation, were too inconsistent for a trend to be identified, or the features were left blank in the transcription are marked with ✖. The annotation T-E corresponds to the pronunciation of Thai English by the speaker employed in the experiment. As demonstrated, the conversion of all pronunciation production and reception data to IPA, allowed for a more thorough and systematic phonetic analysis.

All symbols and colours in Tables 4.3- 4.10 can be represented as follows.

◼ Different pronunciation between standard pronunciation and Thai-English pronunciation that led to unintelligibility.

◼ Same pronunciation between standard and stimulus pronunciation that led to unintelligibility.

✔ intelligible sound features perceived as the standard pronunciation by most of the participants.

✖ Too inconsistent or empty data among the participants.

According to the theoretical framework of the LFC (Jenkins, 2000), that communication breakdown is the main and ultimate focus, the problematic non-standard pronunciation features to be included in the Thai EIL pronunciation core must be the sound features that were not only deviated from the reference pronunciation but also failed to be perceived accurately from the targeted word of the speaker by participants. If the sound feature was pronounced differently from the reference pronunciation but did not negatively affect comprehension, the feature was excluded from the core.

Table 4.3

*Phonetic Transcription of "**Probably**"*

Standard Pronunciation	**CMU**	pr	ɒ	b	ə	b l	i
	BrE	pr	ɒ	b	ə	bl	i
	AmE	pr	ɑː	b	ə	bl	i
Speech Sample Pronunciation	**T-E**	pr	ɔ	m	-	- l	i
Trend of Transcription	**NSs**	✔	ɔ	m	✖	- l	i
	NNSs	✔	ɔ	✖	✖	✖	✖
	Thai	✔	ɔ	✖	ɪ/ i	✖	✖

Probably was the only word found unintelligible across participant groups. From comparison of the standard references of pronunciation, it was evident there is only one variant in pronunciation; [ɑː] in American English pronunciation in Longman Dictionary, while it is pronounced as [ɒ] in the other two pronunciation references: American English from CMU, and British English from Longman Pronunciation Dictionary. This vowel sound can be viewed as a variant across L1, however, its quantity and quality occurs at an approximately close position. The aforementioned variant was the only discrepancy identified between the standard pronunciation references.

When comparing standard pronunciation with T-E (Thai-accented English pronunciation), the salient feature identified as an impediment to intelligibility was the

reduction of unstressed syllable [bə] by replacement with a strong released pronunciation of single, consonantal, bilabial nasal sound [m] instead. This observation highlights, though using a different sound for substitution, and omission of the vowel in the unstressed syllable, the same manner of articulation was utilised. The speaker produced [m], which shares the same bilabial sound quality as [b], but with an audible release instead of using an unstressed vowel in the syllable. The use of [m] to replace [bə] indicated that the quality of stop is modified to a nasal quality when the unstressed vowel is omitted. Participants also transcribed this feature as [m]. The omission of [b] continues to the position of [bli] as the cluster onset in the final syllable of the word, but leaves only [l] pronounced as the onset here. This implies that the speaker struggled with using bilabial stop [b] in the unstressed syllable when it occurred in a consonant cluster. Only NSs caught this remaining [l] as pronounced by the speaker however, the other two groups of participants, NNSs and Thais, completely failed to perceive this incomplete cluster. When consideration was given to the vowels in the word, a heightening of the position of the tongue was discovered in T-E, exhibited in the pronunciation of the open back vowel [ɒ] as an open-mid back vowel [ɔ]. This pronunciation resulted in accurate transcription from participants who transcribed the vowel as an [ɔ] open-mid black vowel. However, specifically to [ɒ] or [ɑː], these two vowels are also the variance shown in British and American accents, therefore interchangeable and not considered a distinctive feature of the word.

The analysis of the distinct sound features produced in the word probably provided a clear indication that those features pronounced differently resulted in a detriment to intelligibility for all participant groups. The errored features were shown to exacerbate the issue more so for NNS and Thai participants who failed to recognise the majority of speech sounds, whereas NS demonstrated accurate comprehension to the stimulus pronunciation.

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Non-standard sound features leading to intelligibility failure.

- The reduction of number of syllables in the word: the omission of unstressed syllable [bə]

- The pronunciation of stop bilabial [b] as nasal bilabial [m]

- Consonant deletion: the omission of consonant in the cluster [bl] as [-l]

- The pronunciation of open back vowel [ɒ] or [ɑ:] as open-mid back vowel [ɔ]

As previously noted, there was only one problematic word found mistranscribed by more than 50% of participants in the weak Thai-accented English condition. The additional seven problematic words were identified in the moderate and strong accent conditions. The following three words were identified in the moderate accent condition.

Table 4.4

*Phonetic Transcription of "**Dressing**"*

Standard Pronunciation	CMU	dr	ɛ	s	ɪ	ŋ
	BrE - AmE	dr	e	s	ɪ	ŋ
Speech Sample Pronunciation	T-E	dʷ	ɛ	s	ɪ	ŋ
Trend of Transcription	NSs	✔	✔	✔	✔	✔
	NNSs	✘	✘	✘	✘	✘
	Thai	✘	eɪ	✔	✔	k

The comparison of standard pronunciation references for the word dressing revealed that there is only one vowel sound pronounced differently: [ɛ] in CMU is pronounced as [e] in Longman Pronunciation Dictionary both for American and British English. There was coherence across the standard pronunciation references for all other features.

Analysis of the word dressing indicated that the sound feature pronounced differently in Thai pronunciation was the initial cluster [dr] while the rest of the sounds were pronounced in accordance. The sound, alveolar retroflex [r] that occurs in the cluster

[dr] at the initial position of the syllable can be considered a variant in phonetics and can be classified phonetically as rhotic, trill, liquid, retroflex, or approximant. In addition, the pronunciation of rhotic [r] in English heavily depends on language dialect – both regional and social, rather than consideration as a distinctive feature. In the case of dressing as produced by the Thai speaker, the pronunciation of [r] as approximant by substituting it with [w] was a salient feature. In Thai phonology, [r] is trill and cannot be used in the sound environment of this words pronunciation – cluster consonant preceded by [d]. In addition, [r] as retroflex used in the accurate pronunciation of this word is absent from the Thai phonology system. Hence, the speaker used approximant [w] to substitute this sound in the given cluster environment. As illustrated, from the word dressing, the non-standard sound feature that was found to impede intelligibility of NNS and Thai participants was determined by the incorrect pronunciation of consonant cluster [dr] as [d^w]. Examination of the effect of the accompanying sound features (as highlighted in red) on intelligibility indicated that the decrement in intelligibility did not result from a disparity in pronunciation between that of the stimulus and standard pronunciation. As the problematic sound occurred at the very initial position of the word, this promotes discussion regarding the position of the problematic feature and its relationship to overall intelligibility. Furthermore, this research aimed to investigate problematic segmental features only, as such, intelligibility failure when segmental features were all pronounced accurately to the standard pronunciation can be attributed to errors in supra-segmental features.

It is important to note that this word functioned, and was pronounced in the form of a compound noun in the context as cross-dressing rather than the isolated word dressing itself (Appendix G: Transcription of Recording 2). Though dressing was considered a common term in the general knowledge of English language users, cross-dressing, on the contrary, was considered the technical term used in the specific context. Interestingly, regardless of the pronunciation in the speech sample, NSs transcribed this word accurately as targeted by the speaker while the data from NNSs was too inconsistent. With respect to

Thai participants, though the analysis of the transcriptions highlighted their failure to perceive the initial cluster accurately, they perceived the vowel approximately close to the targeted pronunciation. Idiosyncratically, Thai participants perceived the final sound [ŋ] as [k] even though it was pronounced as [ŋ] by the speaker.

Non-standard sound features causing intelligibility failure.

-         Consonant insertion: the pronunciation of consonant cluster [dr] at the initial

            position of the word as [dʷ]

Table 4.5

*Phonetic Transcription of "**Genre**"*

Standard Pronunciation	**CMU**	ʒ	ɑ	n	r	ə
	BrE	ʒ/dʒ	ɒ/ ɑ: /ɒ̃	n	r	ə
	AmE	ʒ	ɑ:	n	r	ə
Speech Sample Pronunciation	**T-E**	ʃ	ɔ	n	-	-
Trend of Transcription	**NSs**	ʃ	ɔ	n	✖	✖
	NNSs	ʃ	ɑ:/ ɔ	ŋ/n/m	✖	✖
	Thai	✔	✔	✔	✔	✔

Analysis of the word genre demonstrated that comprehension was poor for almost all NSs and NNSs but not for any Thai participants. In addition, among NSs and NNSs, the sounds transcribed were relatively close to what was uttered by the speaker. From comparison of the standard pronunciation references, two sound features were identified as differed. The identified sound features were consonantal sound [ʒ] or [dʒ] and vowel sounds [ɒ], [ɑ:], [ɒ̃], and [ɑ]. From the investigaion, it can be asserted that both consonant and vowel differences here should be viewed as variants of English L1. This assertion is due to their occurrence at a very close place and manner of articulation, as well as quantity and quality. However, the T-E pronunciation which led to intelligibility failure was too far deviated from those of standard variants.

Comparative to the results found for probably, the core feature that led to intelligibility failure was the reduction of the final unstressed syllable: [rə]. Consequently, instead of having two syllables, this word was reduced to one-syllable in T-E pronunciation. Further similarities were found when considered in light of the results for dressing, the pronunciation of rhotic [r] in English was problematic for the Thai speaker. Given these two phonological differences among Thai and English pronunciation: stressed/unstressed syllable pronunciation by the syllable-timed L1 speaker, and the pronunciation of rhotic [r], the final syllable [rə] was entirely omitted from the pronunciation of the speaker. The results identified only Thai participants as able to accurately transcribe this word, an advantage of accent familiarity and predictability. As for vowels, albeit this speech sample was provided by a different speaker and was classified as moderate in accent, a heightening in the position of the tongue was still detected, evidenced in the pronunciation of open back vowel [ɒ] as open-mid back vowel [ɔ], similarly found in the weak accent condition in the pronunciation of probably.

From the analyses of the error transcriptions it was apparent that, with the exception of Thai participants, acoustic perception of the final syllable was non-existent (as it was not produced by the speaker). Additionally, every sound feature of the word genre was pronounced discordantly to the standard pronunciation leading to intelligibility failure. Furthermore, the analysis of transcriptions demonstrated that the sounds were perceived as uttered. Nevertheless, in relation to the pronunciation of alveolar nasal [n] as velar nasal [ŋ] at the coda position of the first syllable, even though failed to be intelligible as [n], was perceived as not much deviated from the intended word. As illustrated, every participant perceived this sound in the group of nasal quality sounds: either [m], or [n], or [ŋ] which all share the same place of articulation as nasal.

Non-standard sound features causing intelligibility failure

- The reduction of number of syllables in the word: the omission of final unstressed syllable [rə]

- The pronunciation of voiced as voiceless: voiced fricative alveolar [ʒ] as voiceless fricative alveolar [ʃ] at the onset position

- The pronunciation of open back vowel [ɒ] as open-mid back vowel [ɔ]

- The pronunciation of alveolar nasal [n] as velar nasal [ŋ] at the coda position.

Table 4.6
*Phonetic Transcription of "**Lesbianism**"*

Standard	**CMU**	l	ɛ	z	b	iə	n	ɪ	z	ə	m
Pronunciation	**BrE–AmE**	l	e	z	b	iə	n	ɪ	z	ə	m
Speech Sample Pronunciation	**T-E**	**l**	**ɛ**	**s**	**m**	**æ**	**n**	**ɪ**	**s**	**i**	**m**
Trend of Transcription	**NSs**	✔	e/ɛ/ æ	s	m	ɛ	✔	i	s	✖	n
	NNSs	✔	e	s	m	æ	✔	i	s	✖	✔
	Thai	✖	ɛ	s	p/m	æ	✔	✔	s	ə	✔

The word lesbianism resulted in intelligibility failure across all participant groups. Analysis of the standard reference pronunciations demonstrated continuity in all sound features. The differences in pronunciation of T-E to standard pronunciation are displayed in Table 4.8 and highlighted in yellow.

As illustrated, for the consonants, stop bilabial [b] was pronounced as bilabial nasal [m], concurrent with previous reports, and was perceived as bilabial nasal [m] in the transcriptions by each group of participants. This finding is worth discussion in reference to the case of probably where [b] was pronounced as [m] when it was at the unstressed position of the word. In light of the results for probably the emergence of this feature again is indicative of the habitual L1 phonological transfer to L2 pronunciation of Thai speakers. The sound features identified as most problematic were at the syllable [biə] which was pronounced as [mæ]. Instead of using diphthong [iə] with [b], the speaker monophthongized it as open front [æ]. Additionally, the final syllable [zəm], was pronounced as [sim] where voiced fricative [z] was substituted with voiceless fricative [s].

Furthermore, unstressed schwa was fully stressed with front close [i]. The two unstressed syllables noted – [biə] and [zəm], were mispronounced and fully stressed in T-E pronunciation. The mispronunciation of all described syllables was a significant determiner for intelligibility failure. Intelligibility was also compounded as a result of the terms technicality and irregularity of use. Although recorded as unintelligible when compared to the standard reference, the participants perceived the sounds in this word relatively close to the pronunciation of the speaker.

Non-standard sound features causing intelligibility failure

- The pronunciation of stop bilabial [b] as nasal bilabial [m]

- The pronunciation of voiced [z] as voiceless [s]

- The pronunciation of unstressed schwa [ə] as fully stressed close front vowel [i]

- Monophthongization: the pronunciation of [iə] as open front vowel [æ]

From critical analysis of the error transcriptions, the strong accent condition contained the highest number of mistranscribed words. Overall, four words were identified as inaccurately transcribed by over 50% of participants.

Table 4.7

*Phonetic Transcription of "**Hypothesis**"*

Standard	CMU	h	əɪ	p	ɑ	θ	ə	s	ə	s
Pronunciation	BrE-AmE	h	əɪ	p	ɒ	θ	ə	s	ɪ	s
Speech Sample Pronunciation	T-E	h	aɪ	p	o	t	i	s	i	s
Trend of Transcription	NSs	✔	a/əɪ	p/b/ kʷ	o	l	i	✖	eɪ/ɪ	✖
	NNSs	✖	✖	g/b/p/k/ kʷ	o	l	ɪ	s	ɪ	✖
	Thai	✔	✔	✔	✔	✔	✔	✔	✔	✔

Examination of the error transcriptions for the strong accent condition revealed hypothesis as a problematic word. Comparison of the standard pronunciation references demonstrated that there is only one sound feature pronounced slightly differently, vowel sound [ə] as [ɪ], all other sound features were equivalent. However, for T-E, there were several features that deviated from the standard pronunciation.

The word hypothesis did not pose any intelligibility problems for any of Thai participants whereas it was failed to be intelligible by both NS and NNS participants. Notably, NSs failed to perceive [s] in both positions of the word (onset and coda of the final syllable) and tended to combine the vowel of this syllable to the preceding syllable. Additionally, NSs perceived the vowel in the first syllable slightly differently from the intended word within the speech sample. Interestingly, NSs perceived [θ] which was pronounced as [t], as [l], further evidenced in the results for NNSs. While the manner of articulation of plosive [t] is different from lateral [l], they share the same voiceless quality and place of articulation which is alveolar. This provides an explanation for the perception of sound in this feature from [t] towards [l]. NSs also perceived aspirated bilabial stop [p] variously as [p], [b] or [kʷ]. [p] as pronounced by the speaker and [b] as perceived by some participants in both groups share the same place of articulation as bilabial. Regarding the group of NNSs, they failed to perceive the onset and nucleus sound of the

first syllable and their perception of the coda sound in this syllable, which was [p], was also varied as [g], [b], [p], [k] or [kʷ]. The remaining sound features were perceived as pronounced by the speaker which were incongruent to standard pronunciation. In addition, in the pronunciation of the speaker classified as strong accent, the phenomenon of vowel heightening was also observed, in line with previous reports. That is, the position of the tongue was heightened from open back vowel [ɑ] to close-mid back [o]. Furthermore, the speaker mispronounced diphthong [əɪ] as [aɪ] by using open front [a] instead of schwa. The pronunciation of schwa [ə] and [ɪ] in the standard pronunciation in the final syllable …*sis* as close front vowel [I] was excluded from the analysis because [ə] and [ɪ] are considered variants in standard English pronunciation and the Thai pronunciation was relatively close to [ɪ].

Non-standard sound features causing intelligibility failure.

- The pronunciation of diphthong [əɪ] as [aɪ]: pronouncing schwa [ə] as open front [a]

- The pronunciation of open back vowel [ɑ] as close-mid back vowel [o]: vowel heightening

- The pronunciation of fricative interdental [θ] as stop alveolar [t]

Table 4.8

*Phonetic Transcription of "**Environmental**"*

Standard Pronunciation	**CMU**	ɪ	n	v	aɪ	r	ə	n	m	ɛ	n	t	ə	l
	BrE	ɪ/e/ə	n	v	aɪᵊ	r	ə	n	m	e	n	t		ᵊl
	AmE	ɪ	n	v	aɪ	r	ə	n	m	e	n	ț		ᵊl
Speech Sample Pronunciation	**T-E**	ɪ	n	wa					-	-	-	t	ɔʷ	-
Trend of Transcription	**NSs**	ɛ	m	✘	✘	h	eʊ	m	✘	✘	✘	✘	✘	✘
	NNSs	✘	✘	✘	✘	h	eʊ	m	✘	✘	✘	✘	✘	✘
	Thai	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔

The word environmental, at five syllables, was the longest word in the list of problematic words in this study. Within the standard pronunciation references, there was very little disparity in pronunciation features. However, when compared to T-E, the differences in pronunciation features that led to intelligibility failure were very much deviated from those of the standard pronunciation. The analysis indicated that only Thai participants experienced no difficulties in the perception of this word as targeted by the speaker in the speech sample. Conversely, NSs and NNSs failed to perceive this word accurately, and the trend of the sounds in the word they perceived was too vague and inconsistent to allow for conjecture as to their acoustic perception.

Analysis of the error transcriptions indicated that the speaker tended to omit the unstressed syllable in the word which is coherent with the sound features of problematic words reported earlier. In this case, the speaker combined two unstressed syllables as one: [vaɪ] and [rən] as [wa]. In addition, voiced [v] was pronounced as voiceless [w] under the pretext that voiced labiodental fricative [v] does not exist in Thai consonantal sounds. The most similar place and manner of articulation consonant is [w] which is voiceless bilabial glide. Hence, the strategy of sound assimilation to L1 was employed here. Also, at the coda position of the final syllable, the speaker used [w] to replace [l], as due to Thai

phonological constraints, [l] can occur only at the onset position of the syllable and never elsewhere. This phenomenon of sound assimilation can be found throughout the research into Thai English phonology which will be further explored in the Discussion. Furthermore, [l] and [w] were considered approximants: lateral approximant, and semivowel. Again, they share the same approximant or vowel-like quality of sounds and hence were used interchangeably by the speaker. As for the stressed syllable [men], the speaker completely omitted it from the pronunciation.

When consideration was given to vowel pronunciation, an interesting point arose, that Thai speakers were inclined to pronounce unstressed vowel schwa [ə] as a fully stressed vowel. There is evidence of the various vowel sounds expressed in other non-standard features listed in the words above. For environmental, the speaker fully stressed unstressed schwa as open-mid back vowel [ɔ], again assumed as influenced by the syllabe-timed language of Thai; that every syllable must have equal weight. Finally, with the assimilation of ending lateral alveolar [l] which does not exist in Thai, the speaker employed approximant [w] instead, resulting in [tɔ^w].

Given the mispronunciation features, with the exception of Thai participants, the transcription was left blank indicating a complete inability to comprehend or even guess the word for both NSs and NNSs alike. It can be postulated that this was a result of the position of the error in the pronunciation. The error occurred in the first syllable and was carried to every sound thereafter which resulted in complete unintelligibility of the following sounds.

Non-standard sound features causing intelligibility failure

-       The reduction of number of syllables in the word: the combination of two

        syllables [vaɪ] and [rən] at the middle position of the word as one

        syllable as [wa] and unpronounce syllable [men]

-       The pronunciation of schwa [ə] as open-mid back vowel [ɔ]

-       The pronunciation of voiced as voiceless sound and substitute with the other

sound: voiced labiodental fricative [v] as voiceless bilabial glide [w]

- The pronunciation of voiced as voiceless and substitute with the other sound: voiced alveolar lateral [l] as voiceless bilabial glide [w] at the coda position of the final syllable

Table 4.9

*Phonetic Transcription of "**Management**"*

Standard Pronunciation	CMU	m	æ	n	ə	dʒ	m	ə	n	t
	BrE-AmE	m	æ	n	ɪ/ə	dʒ	m	ə	n	t
Speech Sample Pronunciation	T-E	m	e	n	e	s	m	ɪ	n	-
Trend of Transcription	NSs	✔	ɪ	✔	ɪ	t	✔	✘	✔	✘
	NNSs	✔	ɪ	✔	✘	✘	✔	aɪ	✔	✘
	Thai	✔	✔	✔	✔	✔	✔	✔	✔	✔

The word management did not pose any problems for intelligibility to the Thai participants, whereas NSs and NNSs failed to perceive the vowel as targeted. For NSs, when voiced post-alveolar was pronounced as voiceless alveolar in [dʒ] as [s], they perceived it as [t] which was considered a result of word prediction, while there was a complete failure in perception for NNSs. The omission of the final released consonant cluster also resulted in intelligibility failure with NSs and NNSs. The sound features pronounced in this word were equivalent in all standard pronunciation references. However, the T-E sound features were pronounced discordantly as follows.

Two salient non-standard pronunciation features were identified. First, the different vowel sounds in each syllable as [æ], [ə], and [ɪ] as pronounced in the standard pronunciation were all over-simplified with the use of [e] in both syllables – initial and median, regardless of whether the vowels were stressed or not. Another significant error in pronunciation that led to intelligibility failure was the lack of a final released consonant both in single consonant [dʒ] and consonant cluster [nt]. This was assumed a result of the

influence of the Thai phonology system as consonant clusters are not permitted to occur at the coda position of the syllable. In addition, in Thai, as in many languages in the Tai Kadai language family, the final consonant is never released. Moreover, the pronunciation of voiced as voiceless [dʒ] as [s] was also observed. From analysis of orthographic transcription, the majority of participants interpreted this word as minute. The transcription of this word as minute was considered a result of the position of error, which occurred from the nucleus of the first syllable followed by the nucleus of the second syllable, rather than the level of strength of fricative sound [s] pronounced.

Non-standard sound features causing intelligibility failure.

- The pronunciation of open-front vowel [æ] as close-mid front [e]

- The pronunciation of unstressed schwa [ə] as close-mid front [e] and close front [ɪ]

- Lack of final consonant released: voiced post alveolar affricate [dʒ] as voiceless alveolar fricative [s]

- Lack of final consonant cluster released: [nt] as [n]

Table 4.10

*Phonetic Transcription of "**Design**"*

Standard	CMU	d	ɪ	z	aɪ	n
Pronunciation	BrE-AmE	d	i/ə	z	aɪ	n
Speech Sample Pronunciation	T-E	d	ɪ	s	aɪ	-
Trend of Transcription	NSs	✔	✔	s	✔	d
	NNSs	✔	✔	s	✔	d
	Thai	✔	✔	✔	✔	✔

From an examination of the standard pronunciation guidelines used, all pronunciation features in this word are uniform. There were two sound features of T-E

identified as being pronounced incongruently to the standard references, voiced as voiceless [z] as [s], and lack of final released consonant [n].

The word design was recognised as decide by every NS and NNS participant while for all Thai participants, they perceived it as design as targeted by the speaker. Analysis of the error transcriptions identified the non-standard features leading to intelligibility failure as follows. Congruent with several problematic sounds mentioned earlier, there was the pronunciation of voiceless sound instead of voiced sound: [s] as [z], again, this was considered the influence of L1 and sound assimilation. However, even though residing in a different state of glottis - voicing quality, these two sounds share the same place and manner of articulation as an alveolar fricative. In addition, there was no final consonant pronunciation [n] under the same influence of L1. As such, the participants interpreted these sounds in the syllable as [dɪsaɪ] which was decide, another meaningful word that can be phonetically replaced in this instance.

Non-standard sound features causing intelligibility failure

- The pronunciation of voiced as voiceless: voiced alveolar fricative [z] as voiceless alveolar fricative [s]
- Lack of final consonant released [n]

The eight reported words were those mistranscribed by the majority of participants (>50%) employed in this research. Phonological analyses were conducted to ascertain the problematic sound features which impeded intelligibility, the results of which can be used to establish a Thai EIL pronunciation core. The core can then be used as a reference for teaching and assessing EIL pronunciation in Thailand. The next section will present the problematic words for each group of participants (n > 7) as well as the analyses of the problematic sound features.

4.3.1.3 Problematic words for each group of listeners. The reported non-standard pronunciation features that led to intelligibility failure above examined the features through overall intelligibility. To allow for a greater understanding of how these

features specifically impacted the different groups of participants, further analyses were conducted in relation to the problematic words, those which resulted in intelligibility failure for over 50% of participants, in each participant group. The analyses would also allow for a more in-depth examination of any sound features of Thai-accented English that might be different from the features discussed above.

In each L1 group of participants ($n = 15$), for a word to be considered problematic errors must be identified in a minimum of seven transcriptions. From the analyses, it was found that the problematic sounds can be categorised as a) words that were found problematic for NSs and NNSs, b) words that were found problematic for NSs only, c) words that were found problematic for NNSs only, and d) words that were found problematic for Thais only, detailed as follows.

Table 4.11 illustrates the words identified as problematic for the majority of each group of participants – where more than seven participants in the group mistranscribed the word. The analyses provided further insight into which words were problematic to each participant group and thus some words were identified as problematic for one group but not another. As illustrated in Table 4.13, there were three words found problematic for NSs and NNSs alike (one from the moderate and two from the strong accent condition). However, there were two problematic words that impacted intelligibility for NSs only (one from the weak and one from the strong accent condition). Similarly, there were two words found problematic for the group of NNSs only, and both were from moderate accent condition. For Thai participants, only one word was identified in the moderate accent condition as problematic.

Table 4.11

Problematic Words from the Majority of Each L1 Group

Words	Level of Accent	NSs (*n* = 15)	NNSs (*n* = 15)	Thai (*n* = 15)	Total No. of Listeners Mistranscribing
NSs and NNSs					
Further	moderate	8	10	-	18
System	strong	8	8	-	16
One	strong	11	10	-	21
NSs Only					
See	weak	10	-	-	10
Argue	strong	14	-	-	14
NNSs Only					
Film	Moderate	-	10	-	10
Effect	Moderate	-	10	-	10
Thais Only					
Cinematic	Moderate	-	-	12	12

The same method of phonological analysis was employed as for the overall intelligibility analysis. As such, the problematic sound features in Thai English pronunciation leading to intelligibility failure for the majority of each group of participants can be drawn as follows. The full details of analysis per word can be found in Appendix O.

When considering the problematic sound features which resulted in mistranscription from NS and NNS participants, the errors identified in the weak accent condition fell on the word further and from the strong accent condition were system and one. The foremost error in transcription was determined as due to differences in the pronunciation of consonant: the pronunciation of voiced dental fricative [ð] as voiceless alveolar stop [t], and pronunciation of unstressed vowel schwa [ə] as fully stressed open-mid front vowel [ɛ] or close front vowel [a]. However, the mispronunciation of rhoticity in further can be considered a result of the variation between American English and British English rather than the distinctive phoneme. Per the pronunciation of the speakers regarding these words, they were relatively close to the pronunciation of native speakers in

terms of segmental features. Therefore, it is supposed that the failure in intelligibility could importantly come from the mispronunciation of suprasegmental features as well.

Regarding NS participants only, there were two problematic words revealed through the analyses of errors in transcription. In the weak accent the word see, and argue from the strong accent condition were shown to be problematic. The sound features identified as problematic for intelligibility in the word argue were the pronunciation of open back vowel [ɑ] as open front [a] (vowel quality), monophthongization: combining the pronunciation of diphthong palatal glide [j] and close back vowel [u] as monophthong close front vowel [i], and the insertion of final diphthong [ju] with bilabial glide [w]. Interestingly, most NS participants (10 from 15) interpreted the word see from the weak accent condition as think using orthographic transcription, which indicated that they were certain in their perception of this word. It is evident that see and think have no shared or comparable pronunciation features and analysis of the speaker pronunciation demonstrated that the word was accurately pronounced to the standard pronunciation. This indicates that the error in transcribing the sounds of this word was phonetically idiosyncratic. Furthermore, NNSs and Thai participants did not have any problems in transcribing this word. When analysing the word holistically within the context of the sentence (Appendix G: Transcripton of Recording 1), the word see was in the sentence as "*And..um..so..so far we probably got to focus about the poverty in Thailand and **see** about the inequality of the um...low income people in Thailand.*" From this perspective, the influence of strong top-down processing in text interpretation of native speakers was evident and was beyond the actual pronunciation or their auditory perception. To elaborate, the preposition *about* is usually preceded by the verb think rather than the verb see. In addition, the use of think in this context is more commonplace in language recognition of native speakers. The result provides a strong case for consideration of the influences that affect intelligibility of native speakers out with pronunciation. Given English is their mother tongue, they have more lexeme items such as lexical chunks and phrasal verbs in their language repertoire and are

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more familiar with the use of words in different contexts. These can be considered supplementary factors that specifically affect intelligibility for this group of participants whereas other groups of participants who were non-native speakers relied heavily on the pronunciation of the words only when accessing accented speech. In addition, it highlights that during the intelligibility process, native speakers relied on comprehensibility and interpretability more than the other participant groups. It must also be noted that to transcribe see as think here, did not alter the meaning of the context, but was to correct the language used to be more appropriate (pragmatic function), which is called auto-correction by native speakers.

For the group of NNS participants only, the words transcribed inaccurately were two words from the moderate accent, film and effect. The sound features identified as problematic in the word film was the use of diphthong [ia] instead of pronouncing [ɪ] preceding [l]. Simplification of the final cluster was observed by omitting [l] and inserting vowel [a] after [ɪ] instead. Regarding effect, the crucial error was the lack of final released consonant [t]. However, in the word film, the final released consonant was completely unintelligible to most NNS participants, and from analyses of transcriptions, it was predominantly transcribed as feeling. As demonstrated, NNS participants did not have issues in the perception of the initial consonant, the trouble arose in perceiving final consonant [m].

When the mistranscribed words for NS and NNS participants were analysed in comparison to the standard pronunciation references, findings indicated that the pronunciation in the speech sample was not significantly deviated. In fact, each word identified as problematic contained relatively low levels of pronunciation error. The findings suggest that the errors occurred as a result of suprasegmental features rather than segmental features. This further implies that for NS and NNS participants, the careful pronunciation of prosodic features plays a pivotal role in international intelligibility.

As for Thai participants, there was only one word found mistranscribed among this group, cinematic. The sound features of this word were pronounced comparable in all standard pronunciation references with exception of the pronunciation of [nə], which was the unstressed syllable of the word that was completely omitted by participants. As noted, this was the one word that was failed to be intelligible by almost all Thai participants (13 from 15) and did not result in any intelligibility impediment across the other groups. Analysis of the transcription clearly showed that Thai participants perceived every sound in the syllable as pronounced in the speech sample. Thus, the unintelligibility of the word cinematic was considered a result of participant reliance on bottom-up processing when encountering unfamiliar words. Those considered technical or uncommon result in a strong attachment to acoustic perception stemming from a lack of predictability, this was also evident in NNS participants. Interestingly, the unstressed syllable is always dropped in Thai pronunciation as found in some examples above, at the same time, when transcribing words, they were unsure of, the unstressed syllable was also dropped and assimilated with a word that did not have that syllable such as semantic.

The number of mistranscribed words in each group of participants was not considerably high, eight words equating to 5.1% of total content words included in the analysis. However, the pattern of non-standard features that occurred was approximately similar to the pattern of those problematic sound features in the previous section. In addition, the errors in the production of segmental features: consonants and vowels, was considered secondary with prosody the main contributor to intelligibility failure. The data from each section of analyses provides a wealth of insight into the pattern of non-standard features of Thai English pronunciation leading to intelligibility failure.

4.3.2 Conclusion for Research Question No. 2

After analysing the data as shown above, from 157 content words, pronounced in continuous spontaneous speech samples of Thai English, with three different levels of accents, there were eight words found unintelligible for more than 50% of the participants and another eight words in total identified as unintelligible for each L1 participant group independently. However, the problematic sounds that were found mistranscribed in one group of listeners only were excluded from the summary of problematic features because of the low numbers and above all the phonetic analysis showed that the cause of intelligibility failure was from suprasegmental mispronunciation rather than segmental pronunciation error. Though not exactly identical to the pronunciation references, it was considerably close. As a result, the intelligibility failure caused by the pronunciation of segmentals in these words was not convincing.

Among these problematic and unintelligible words, 21 Thai-accented English segmental features, that were pronounced differently from standard pronunciation in Carnegie Mellon University Dictionary and Longman Pronunciation Dictionary, were identified and further categorised as 13 consonantal sounds, five vowel sounds, and three syllable patterns. The classification of pronunciation error in each group can be drawn as follows. For errors in vowel pronunciation, error types identified were; heightening the position of a vowel, monophthongization, fully stressed unstressed vowel, and the production of incorrect diphthong. For errors in consonantal sound pronunciation, the errors were grouped as the production of wrong consonant cluster, voiced as voiceless, aspirated as unaspirated sounds, and lack of final released consonant. Regarding syllable pattern, there was only one error identified as the omission of unstressed syllable.

The list of non-standard pronunciation features in the units of syllables, vowels, and consonants that resulted in intelligibility failure for each group of participants are shown in Table 4.14 below.

Table 4.12

Summary of Problematic Sound Features of Thai-English Pronunciation as Threats to International Intelligibility

Sound Features	Unintelligible for		
	NSs	NNSs	Thais
Syllables			
The reduction of number of syllables in the word: the combination of two median unstressed syllables [vaɪ] and [rən] of the word as one syllable as [wə] in "en<u>viron</u>mental"	/	/	
The reduction of number of syllables in the word: the omission of median unstressed syllable [bə] in "pro<u>b</u>ably", and [nə] in "ci<u>n</u>ematic"	/	/	/
The reduction of number of syllables in the word: the omission of final unstressed syllable [rə] in "gen<u>re</u>"	/	/	
Vowels			
Vowel Heightening: The pronunciation of open back vowel [ɒ] as open-mid back vowel [ɔ] in "pr<u>o</u>bably", "g<u>e</u>nre", "environment<u>a</u>l"	/	/	/
Vowel Heightening: The pronunciation of open front vowel [æ] as close-mid front [e] in "m<u>a</u>nagement"	/	/	
The pronunciation of diphthong [əɪ] as [aɪ]: pronouncing schwa [ə] as open front [a] in "h<u>y</u>pothesis"	/	/	
The pronunciation of schwa [ə] as close front vowel [i] in "lesbian<u>i</u>sm", "hypothes<u>i</u>s", and "managem<u>e</u>nt", close-mid front [e] in "man<u>a</u>gement", open mid front [ɛ] in "system", open front [a] as in "one"	/	/	
Monophthongization: the pronunciation of [iə] as open front vowel [æ] in "les<u>bia</u>nism"	/	/	/

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Sound Features	Unintelligible for		
	NSs	NNSs	Thais
Consonants			
Voiced as voiceless: voiced fricative alveolar [ʒ] as voiceless fricative alveolar counterpart [ʃ] at the onset position in "ge<u>n</u>re"	/	/	
Voiced as voiceless: voiced labiodental fricative [v] as voiceless bilabial glide [w] in "en<u>v</u>ironmental"	/	/	
Voiced as voiceless: voiced alveolar lateral [l] as voiceless bilabial glide [w] at the coda position of the final syllable in "environmenta<u>l</u>"	/	/	
Voiced as voiceless: voiced alveolar fricative [z] as voiceless alveolar fricative [s] in "de<u>s</u>ign"	/	/	
Voiced as voiceless: voiced dental fricative [ð] as voiceless alveolar stop [t]	/	/	
Velar nasal [ŋ] as alveolar nasal [n] at the coda position in "ge<u>n</u>re"	/	/	
Stop bilabial [b] in [bə] as nasal bilabial [m] in "pro<u>b</u>ably"	/	/	/
Fricative interdental [θ] as stop alveolar [t] in "fur<u>th</u>er"	/	/	
Wrong consonant cluster production: [dr] at the initial position of the word as [dʷ] in "<u>dr</u>essing"		/	/
Consonant cluster deletion: [bl] as [l] in "probab<u>l</u>y"	/	/	/
Consonant cluster deletion: [nt] as [n] in "manageme<u>nt</u>"	/	/	
Lack of final consonant released: voiced alveo-palatal affricate [dʒ] as voiceless frivative alveolar [s] in "management"	/	/	
Lack of final audible consonant released: alveolar stop [t] in "effec<u>t</u>"	/	/	

The findings from the analyses demonstrated that the strong Thai accent resulted in the highest proportion of non-standard features leading to intelligibility failure, followed by the moderate then weak accent condition. The results from the investigation of problematic sound features from RQ2 were found in accordance with RQ1 "To what extent is the level of Thai accentedness (weak, moderate, and strong) in spontaneous English speech associated with intelligibility level of the following groups of listeners as measured by the accuracy of their transcription of the speech stimuli?" From RQ1, it was evident that NS and NNS participants performed better when the accent was weak or moderate but performance decreased when the accent was strong. This implies that for these two out of three groups of listeners, more problematic features were encountered in the strong accent condition, further supporting the notion that the non-standard sound features displayed in Thai English pronunciation contributed to intelligibility failure for NS and NNS participants only. When intelligibility was assessed overall for each accent, the main problematic segmental sound features of Thai English pronunciation that resulted in intelligibility failure for these two groups of global listeners were identified. These features should form the Thai EIL Pronunciation Core, as proposed by the current research, and are shown in Table 4.13.

Table 4.13

Thai EIL Pronunciation Core

Segmentals	Features	Examples
Consonants	Clusters: Final Cluster: lack of final release	Dropping of the final segment such as [t] in "manageme<u>nt</u>" and [n] in "desig<u>n</u>", etc
	Initial Consonant Insertion	[dr] as [dʷ] in "<u>dr</u>essing"
	Initial Consonant Deletion	[bl] as [l] in "proba<u>bl</u>y"
	Substitution of sounds in final syllable position	[l] is substituted by [w] in "environmen<u>tal</u>" [b] is substituted by [m] in "pro<u>b</u>ably" [θ] is substituted by [t] in "fur<u>th</u>er" [dʒ] is substituted by [s] in "ma<u>nage</u>ment"
	Voiced pronounced as voiceless	[z] is substituted by [s] in "de<u>s</u>ign" [ʒ] is substituted by [ʃ] in "<u>g</u>enre" [v] is substituted by [w] in "en<u>v</u>ironmental"
Vowels	Full stress is produced on unstressed vowel (schwa)	[mənt] as [men] in "manage<u>ment</u>" [təm] as [tem] in "sys<u>tem</u>"
	Vowel Heightening	[æ] as [e] in "<u>ma</u>nagement" [ɑ] as [ɔ] in "g<u>e</u>nre" [ɑ] as [o] in "hyp<u>o</u>thesis"
	Monophthongization	[iə] as [æ] in "lɛmænɪsim"
Syllable Structure	Reduction/omission of unstressed syllables	[rə] in "gen<u>re</u>" [bə] in "pro<u>b</u>ably" [vai] and [rən] in "en<u>viron</u>mental"

The provided examples of each feature, the reduction/omission of unstressed syllable, lack of final released consonant, the pronunciation of voiced as voiceless sounds, cluster simplification, the pronunciation of unstressed vowel (schwa) as fully stressed vowel, heightening vowel position, and monophthongization are very common Thai-accented English features stated in comparative studies of Thai and English phonology, Smyth (1987), Luksaneeyanawin (2005) and Kanokpermpoon (2007). However, there was only one feature included in the LFC (Jenkins, 2000) which was cluster simplification. Furthermore, only a few features were included in Kirkpatrick's (2010) ASEAN English which were monophthongization and lack of reduced vowel. This disparity suggests that Thai English pronunciation is considerably unique and may not have the same generalisability as other major ESL accents in the world.

The analyses revealed that intelligibility failure was mainly due to the discrepancies between Thai and English phonology. Nevertheless, the influence of participants L1 cannot be underestimated and was shown to play a crucial role as well, for instance, accent familiarity of shared L1 listeners, and top-down process and lexicon size of native speakers of English.

4.4 Analysis and Results of Research Question No. 3

To what extent were the possible indicators of intelligibility namely attitudes, familiarity to international accents of English, and perceived intelligibility, as measured by the questionnaires with 6-point Likert scales associated with intelligibility performance?

The subjective data was collected following completion of each transcription condition. After finishing the transcription of each recording representing each level of foreign (Thai) accent, participants were then asked to rate their impression towards that accent (attitudes) in addition to how well they thought they could recognise the utterances in the speech (perceived intelligibility). Familiarity to international accents of English (very familiar, fairly familiar, and not familiar) was included in the first section of the questionnaire which requested personal background information and was completed prior

to the transcription process.

4.4.1 Data Analysis and Results

The relationship between actual intelligibility performance (scores from accurate transcription) and each of the subjective factors was processed by correlation coefficient (Spearman's Rho) to ascertain if there was any association between the variables with the sample size of 45. All participant data in this part was processed regardless of their L1 group because the purpose of this research question was to explore the correlation of intelligibility measurement via subjective and objective methods. Normally, when analysis aims to explore the relationship between two variables, correlation coefficient is adopted. However, there are two types of correlation coefficient: Pearson and Spearman's Rho. In this research, as the data was collected using different measurement scales: interval data for intelligibility scores and ordinal data from Likert scales for subjective measures, Pearson was rejected, and Spearman's Rho analysis was run (Pallant, 2007).

4.4.1.1 Attitudes of listeners and intelligibility scores. The elements of attitude measured in this study were adapted from Jenkins (2007). In this research, to gauge attitude towards the accent the items measured were 1) correctness 2) acceptability 3) pleasantness 4) intelligence and 5) friendliness. All of these items were processed as the holistic impression or attitudes of the listeners towards the accent. The participants rated their attitude toward each level of accent in each speech sample through 6-point Likert scales; for example, *very correct* 1 2 3 4 5 6 *very incorrect*, *very pleasant* 1 2 3 4 5 6 *very unpleasant* (Appendix K). Like the attitude analysis method used in Jenkins (2007), the ratings were interpreted as bipolar data: positive and negative. To illustrate, regardless of where the item was rated between 1-6, a rating between 1-3 was interpreted as positive while a rating between 4-6 was interpreted as negative. The representation of the overall attitudes of each participant toward the accent as the positive or negative attitudes was from the majority of their rating: three out of five items. For illustration, if there were three items rated as positive while there were another two items rated as negative, it was

processed that this participant had positive attitudes towards the accent. Once the data was obtained, it was processed by correlation coefficient to investigate the relationship between the variables – intelligibility predictors and actual intelligibility level.

The data obtained regarding attitudes as an intelligibility predictor and actual intelligibility revealed that there was a significant correlation between the two variables (p < .001); thus, higher intelligibility scores were correlated with a positive attitude towards the accent. However, it must be noted that the correlation was weak (r_s= .27) (Appendix M: Table M20).

4.4.1.2 Familiarity to international accents of English and intelligibility scores. Familiarity to international accents of English as an intelligibility predictor gained from rating method was examined in relation to actual intelligibility scores to investigate the association between the two variables. Familiarity to international accents of English was explained to the participants as related to international talk and communication with people with a variety of English accents, not just Thai-accented as in the research speech samples. The data demonstrated that the relationship between participants rating of their familiarity to international accents of English in general (very familiar, fairly familiar, and not familiar) and their intelligibility score was negatively correlated (r_s = -.04) but it must be noted that the relationship was not statistically significant (p = .65) (Appendix M: Table M21). Therefore, it can be asserted that the intelligibility of a particular accent of English (Thai accent in this study) was not related to their rating on familiarity to international accents of English in general.

4.4.1.3 Perceived intelligibility of speech and intelligibility scores. Participants rated perceived intelligibility using a 6-point Likert scale, as in the attitudes survey, from *very intelligible* 1 2 3 4 5 6 *very unintelligible* for each level of accent. As before, a rating between 1-3 was interpreted as positive while between 4-6 was interpreted as a negative. From the analysis, it was observed that there was a significant correlation between the two variables (p < .001) and the relationship was moderately positive (r_s = .51) (Appendix M:

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Table M22). Thus, the indicator of perceived intelligibility to actual intelligibility is correlated and can be considered reliable, especially when compared to the previous two predictors of which the relationship to actual intelligibility was weak (attitudes) or not significant (familiarity to international accent of English).

4.4.2 **Conclusion for Research Question No.** 3

According to the data obtained from the statistical analyses, the relationship between possible predictors for intelligibility as gained by rating methods and actual intelligibility scores reported the correlation variously: a weak significant positive correlation between attitudes and actual intelligibility, and significant moderate positive correlation between perceived intelligibility and actual intelligibility, but no significant correlation between familiarity to international accents of English and actual intelligibility. Therefore, the most reliable assertion regarding subjective data as an indicator for intelligibility relates to perceived intelligibility followed by attitudes. The claim claim familiarity to international accents of English in general, as gained by rating methods, cannot be considered an effective predictor of actual intelligibility of a particular foreign accent of English.

4.5 Summary

Although the descriptive statistics for overall intelligibility of Thai English pronunciation demonstrated that Thai English was considered intelligible to global listeners (overall scores were higher than 60%), the inferential statistics data (one-way and two-way ANOVAs) revealed that the scores from each participant group through level of accent were significantly different. There was a statistically significant difference regarding the effect of each level of Thai accent on intelligibility across different participant groups. Results from post hoc analysis (Tukey HSD) demonstrated that the strongest accent was most intelligible to Thai participants while the weaker accents were more intelligible to the other participant groups. Given the results it is clear that a reduction in accentedness is important for intelligibility when communicating with NSs,

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and this can be stressed even more when communicating with NNSs. Furthermore, the pedagogical implications of the results for EIL teaching and learning context within Thailand must be considered. In order to achieve high levels of intelligibility of Thai-accented speech in global communication consideration must be given to the interactions students will most likely engage in during their course of study and from employment in their field. Careful consideration would allow for more or less emphasis on pronunciation and cater to the student's future needs. In addition, the data also highlighted a considerably significant difference between the strong accent and the weak/moderate accents for NS and Thai participants, this result was not replicated in data between the weak and moderate accents where no significant results were obtained, indicating that only a strong accent impacts on intelligibility. However, while a significant difference was observed the results were found to be inverse, that is, when the speech was strong in accent, intelligibility was dramatically reduced for Nss, whereas it significantly increased for Thai participants. Consideration of the results for NNS participants highlighted that level of accent was a significant impactor on intelligibility level through each level of accent. Statistically significant results were obtained from measurements between each level of accent: as level of accent increased intelligibility significantly decreased. The findings imply that NNSs are more sensitive to foreign accents of English as accent strongly impeded intelligibility, as such when engaging in interaction with NNSs an endonormative standard of pronunciation is key to increasing intelligibility.

Although the number of mistranscribed content words from the speech samples were not considerably high (16 out of 157 words) from majority of overall participants (> 22) and within each group of participants (> 7 in each group), the pattern of problematic sound features leading to intelligibility failure were found to be approximately close in all groups of participants. In other words, regardless of which participant group made the errors in transcription, the phonological features that led to intelligibility failure occurred repeatedly in the same pattern in all level of accents. It is important to note that, however,

problematic words mistranscribed by Thai listeners were extremely low; hence, it can be claimed that the problematic sound features found in this study heavily relied on data from NSs and NNSs. In sum, from the current research, the problematic sound features (segmentals) of Thai English pronunciation leading to unintelligibility for EIL communicators were; the reduction/omission of unstressed syllable, the pronunciation of unstressed vowel (schwa) as fully stressed vowel, heightening the position of vowel sounds, monophthongization, lack of final released consonant, the pronunciation of voiced as voiceless sounds, and failure to produce some clusters accurately.

The consideration of results between possible indicators of intelligibility and actual intelligibility scores indicated that the attitudes of the participants positively correlated to their intelligibility scores, however this correlation was weak. As a result, tentative assumptions can be made regarding participants' attitudes and overall intelligibility, that when participants had a positive attitude towards an accent the speech was more intelligible. As for the rating on familiarity to international accents of English, it was evidenced that there was no statistically significant relationship. Therefore, self-rated measures of familiarity were shown to be unreliable predictors of intelligibility as the data did not correlate with actual intelligibility level. Finally, the relationship between ratings in perceived intelligibility and actual intelligibility found a moderate positive correlation between the two factors. Due to the results reported, rating perceived intelligibility was regarded as a reliable indicator for actual intelligibility, that when a person claims that he or she can understand the language well, it is reliable that they do. In conclusion, it can be claimed that the measurement of intelligibility through rating methods or subjective test is considered less reliable and trustworthy than an objective test.

4.6 Closing Remarks

The critical analysis of results provided throughout this chapter highlight several issues in relation to accentedness and L1 of listeners on intelligibility. One of the most salient features identified was that acoustic perception of accented English varied greatly

as a consequence of the participants L1 and the strongest level of accent was established as most intelligible by the shared L1 group of listeners. In order to provide a conclusive explanation regarding this phenomenon, Thai-accented English features as the threats to intelligibility were examined based on phonological analysis of the transcription data obtained from the participants. These features were compared with standard English pronunciation references and together, they showed, formed, and reinforced the relationships between Standard English and Thai-accented English. The multiple identifications in Thai-accented English that this chapter revealed were confounding, contingent, ambivalent, and conflicted with previous research. The following chapter discusses these issues, offering interpretations, and implications of the key empirical findings.

CHAPTER 5

DISCUSSION

5.1 Introduction

Intelligibility can be measured using orthographic and pseudo-transcription methods, with the latter considered innovative in its application. This study used these methods, in addition to pronunciation re-spelling systems, examination of foreign accentedness, and use of diversified L1 participant groups. Due to these rigorous intelligibility measuring methods, the results obtained from the research is considered adequate to fill the identified gaps in the literature. To elucidate, the current research utilised the judgement of both phonetically trained and native English speaker judges to ascertain level of foreign accent which allowed for an investigation into its effect on the acoustic perception of different participant groups: English NSs, English NNSs; non-shared L1 and English NNSs with shared L1. The use of phonetically untrained listeners as intelligibility raters was considered fundamental in intelligibility measurement as "they may provide insight into how understandable L2 speakers are when they interact with other members of their community" (Munro, 2008, p. 200). Furthermore, a phonological core in relation to international intelligibility has been established through the authentic acoustic perception of the participants – not by the interpretation and observation of the researcher. In addition, the analysis of the core is specifically for Thai-accented English which, at the time of this study, had yet to be examined, with the analysis conducted by a local EIL authority: Thai EIL researcher. This core can also be applied to other languages in East Asia where the phonology system is close to Thai. Finally, the potential predictors of intelligibility as gained by subjective methods were crosschecked with results gained from objective tests to ascertain the presence of a correlation.

This chapter aims to provide an explanation of the findings grounded in the theoretical framework of English as an International Language and Lingua Franca Core (Jenkins, 2000). To conceptualise, interpret, and discuss the research findings in line with

the research questions and literature, the chapter is organised into three main sections. The first section is the interpretation and discussion of empirical results in relation to the association of different levels of foreign accent in English pronunciation to the perception of different L1 groups of listeners. This section contains four subsections: 1) effect of shared L1 on L2 accented speech intelligibility, 2) effect of nativeness of the language on accented speech intelligibility, 3) effect of non-nativeness and non-shared L1 on foreign accented speech intelligibilility, and 4) debates in the rejection and acceptance of native-like pronunciation for EIL international intelligibility purposes. The second section discusses the phonological analysis of Thai and English, specifically the pronunciation features that led to intelligibility failure, to establish minimum standard pronunciation features or Thai EIL pronunciation core. Jenkins' (2000) Lingua Franca Core is applied to conceptualise the research findings surrounding phonological analysis to inform pedagogical design for increased intelligibility. The third and final section is the discussion of additional variables that act as predictors for intelligibility using the data gained from rating methods – attitudes, familiarity to international accents, and perceived intelligibility. The discussion will be applied to the consideration of other intelligibility measurement methods in addition to objective tests.

5.2 Association of Different Levels of Foreign Accent in English Pronunciation to the Perception of Different L1 Groups of Listeners

According to the basic assumption of this study, as supported by previous research, (Best & Tylor, 2007; Munro *et al*., 2006) the acoustic perception of Thai-accented English by different L1 participants is not identical. Those sharing the same L1 were assumed to recognise their L1 accented English best, followed by native speakers of English, and non-native speakers of English, respectively. Consequently, it was assumed that the strongest level of accent would be best intelligible for the shared L1 listeners (Thai), while NSs and NNSs would perform better when the foreign accent is weaker. Analysis of the transcriptions confirmed these assumptions. They indicated that of the

three groups of participants, the best intelligibility scores were from Thai participants, followed by NSs and NNSs, respectively. As previously mentioned, NSs understood Thai English pronunciation best when the accent was moderate, followed by weak and then strong. However, the differences in the scores of moderate and weak accents were not statistically significant. Through an examination of results for NNSs who were not Thai, the pattern of the scores was established as significant across all levels of accents. To elucidate, NNS intelligibility was highest when the accent was weakest, followed by moderate then strong to a significant degree. Thai participants exhibited higher intelligibility when Thai accent was strongest, followed by the weak and then the moderate accent. Thai listeners' direction of intelligibility performance was contradictory to that demonstrated by NSs. However, as with NSs, the variance in scores between weak accent and moderate accent intelligibility were not statistically significant.

The insignificant findings obtained between NSs and Thai participants in relation to weak and moderate accents was compelling and slightly converse to the anticipated results. Therefore, it was necessary to conduct a systematic review of the original transcription employed as the stimulus in each condition to ascertain whether there were any discrepancies. The review revealed that in the moderate accent speech sample, there was a slightly higher occurrence of technical terms than in the weak accent and the strong accent samples. The technical terms voiced in the moderate accent were lesbianism, cross-dressing, and cinematic (Appendix G: Transcription of Speech Samples). The analyses of the accurate transcriptions demonstrated that the use of these technical terms led to a higher rate of failure in intelligibility for Thais in the moderate accent condition. In comparison, NSs could transcribe the terms accurately despite some mispronunciation features detected in the utterances. The strong accent condition was populated with common terms and lacked the lexical complexity as in the moderate accent condition. Contrary to the moderate accent condition, NSs and NNSs were unable to perceive the sounds as targeted, whilst Thai participants could, such as in the words hypothesis,

management, system, one, etc. The interplay between lexicon knowledge and phonological intelligibility is clearly demonstrated and therefore must be given consideration as a confounding factor in addition to the effect of pronunciation.

The critical role of lexicon, or lack thereof, is further exacerbated for NNSs of English who do not share L1 with the speaker. Hence, the intricacies surrounding lexicon knowledge in relation to intelligibility is worth further discussion surrounding the advantage of NSs mother tongue in the intelligibility of English L2 as well.

Moreover, the findings shown between Thais and NSs, as noted above, demonstrated that there is a certain comparable trend in intelligibility scores between NSs and Thai participants. This can be considered the implication of shared L1 and English as a native language advantage for intelligibility. The interactions found in the present study are further discussed below, in terms of their implications.

5.2.1 Effect of Shared-L1 on Intelligibility

It has long been recognised that listeners process spoken language in ways which are tailored to suit the phonological structure of their native language (Cutler *et al*., 2006). This was also clearly evidenced in the literature, with international intelligibility better for those who shared L1 than for speakers of other L1s (Smith and Bisazza,1982; Jenkins, 2002; Bent and Bradlow, 2003), which resulted in an increase in phonological transfer by convergence. These results indicate that participants who shared L1 with the speakers were better able to comprehend the speaker's L2 speech, based on shared linguistic knowledge, than those with a different L1 background (Bent & Bradlow, 2003; Kachi, 2004). A significant phonological factor impeding comprehension is considered accent: the consequence of the marked difference in the realisation of non-pathological L2 speech patterns from NS norms. Research has demonstrated that those with a different L1 had a different accent which strongly affected speech recognition (Stibbard & Lee 2006; Harding, 2012; Ockey & French, 2014). Therefore, the application of similar L1 phonological inputs was the indicator for efficient listening, especially the segmentation of

continuous speech into its component words (Culter *et al.*, 2006). Based on the principle that L2 accent is characterised by the transfer from L1, the shared L1 listeners would have intimate familiarity with the phonological patterns of that speaker's L2 accent (Jenkins, 2000). In this study, Thai listeners share the same segmentation of speech and other phonological patterns with the speakers, rooted in a syllabic segmentation base which differs from NS of English who use stress-based segmentation. Although English is not their mother tongue, and Thai listeners possess a lack of background knowledge and context clues with the controlled topic being tested, they demonstrated the highest intelligibility scores when comparing the overall performance of all three participant groups. To reiterate, this study provided compelling and supporting evidence that shared L1 between listeners and speakers is considered an utmost advantage in perceiving L2 speech, and indicates that intelligibility is greatly facilitated by an interlanguage match (Bent & Bradlow, 2003; Smith & Bisazza, 1982). As discussed by Nash (1969), regardless of type and topic of speech, intelligibility requirements are reduced when the speaker and listener come from the same first language. Also, Yule *et al.* (1990) found that NNSs were able to understand their own accented speech better than that of others who share L1, while Major *et al.* (2002) concluded that familiarity to an accent could be considered an aid to intelligibility. According to the results obtained, the benefits of shared L1 is more prevalent when the accent is strong.

However, the review of literature highlighted inconsistent findings in this regard; such as the work of Major *et al.* (2002), Munro *et al.* (2006), and Harding (2012). These works reported that the advantage in understanding accented utterances from speakers who share the same L1 were small and sporadically observed. As previously delineated in Chapter 2, Munro *et al.* (2006) have reported converse results to the current study. To explicate, Major *et al.* (2002) reported that Spanish speakers exhibited a small intelligibility advantage when hearing Spanish-accented English. Furthermore Munro *et al.,* (2006) found that Chinese and Japanese speakers did not show any significant

advantage in hearing their own acted English speech. As demonstrated there are disparate views regarding the effect of shared L1, with opponents of the shared L1 hypothesis effect on L2 intelligibility arguing that it does not necessarily relate to higher comprehension. This contention is noteworthy, as it is clear that there is as yet, no indication that reduction of accent leads to increased intelligibility (Munro & Derwing, 1995a). Given that Thai participants in this study demonstrated the highest scores for intelligibility, to a significant level over NSs and NNSs for the strong accent condition, has provided compelling evidence that supports previously conducted empirical research, including Derwing *et al.* (2002), Jenkins (2002), Smith and Bisazza (1982), that shared L1 is indeed considered a benefit for understanding L2 speech, especially when the accent is strong. However, as the discordant results come from research which employed different methodologies, it is not surprising that there were inconsistencies in the findings. As mentioned, Munro and Derwing's works tentatively asserted that although accentedness, comprehensibility, and intelligibility are related, they are partially independent, for example, speech that is rated heavy in accent can be understood perfectly by the same listener. Irrespective of the methodological details discussed in Chapter 2, while it is possible to claim that the benefits of shared L1 do not necessarily lead to an increase in intelligibility, it is evident from their results that Munro and Derwing cannot completely dismiss the influence of such benefits. Throughout their research, a positive relationship between the two factors, albiet with fluctuating significance levels, was detailed. In line with previous research from various EIL authorities e.g. Smith and Bisazza (1982), Jenkins (2002), Nejjari *et al.* (2012), Ockey *et al.* (2016), the results obtained from the current study shed more light on the benefits of shared L1 on intelligibility; that as strength of accent increased, listening scores decreased. This is indicative of the extra effort required to process the higher degree of accent to attain full comprehension from those sharing same L1.

5.2.2 Effect of Nativeness on Speech Intelligibility

The advantages of mother tongue of NSs has also been proposed as a significant predictor of intelligibility when tacking with L2 accented speech. Crystal (2003) stated that native speakers were believed to have intuitive knowledge regarding their language, a quality that cannot be attained by non-native speakers through their acquisition of a second language. It is clear in the literature that for NSs, their intelligibility of L2 accented speech is affected by their substrate linguistics and top-down processing as the native speaker of the language (Varonis & Gass, 1982; Brown, 1990; Tyler, 1992). The use of top-down processes by NSs is evident in the current study. Analysis of the transcription data confirmed that NSs rarely utilised pseudo transcription and instead relied on substitution for uncertain words as highlighted in the error transcription data.

Through analysis of the transcription data, it was demonstrated that NSs employed an extremely low level of pseudo transcription and exhibited very high rate of grammatical automatic correction where possible. Such behaviors found in NSs implied their certainty in word recognition, accessibility to mental lexicon, and top-down process. The findings strongly reflect NSs ability to access and use their mental lexicon and utilise top-down processing skills and indicates minimal reliance on acoustic signals when encountering L2 speech, rather focusing on contextual clues. The data confirmed that intrinsic knowledge and mental lexicon are accessed in NSs perception of an L2 accented utterance. Linguistic interdependence hypothesis (LIH) also states that reading, as well as listening performance, in L2 is heavily in accordance with L1 reading and listening ability, especially in vocabulary knowledge, which is a significant predictor for the successful receptive skill of NSs (Vandergrift, 2006). This indicated that the mental lexicon of NSs was the greatest contributor to their higher proficiency in perceiving L2 speech, whereas for Thai listeners, familiarity in L1 acoustic features was considered the advantage.

Critical evaluation of the moderate accent condition discovered a slightly higher frequency of technical terms, these were; lesbianism, cinematic and cross-dressing. For NSs there was a high accurate transcription rate, regardless of the pronunciation of the

speaker deviating from the standard reference pronunciations. However, Thai listeners, though highly familiar with the accent as evidenced by high intelligibility scores in the strong accent condition, failed to transcribe those words and reverted to pseudo transcription to spell their acoustic perception of the sound. The use of pseudo transcription indicates Thai participants were unable to comprehend the utterances as a whole. However, the sound string appeared to be clear to them. This implies that while familiarity to an accent is a contributing factor, it should not be solely relied upon and lexicon knowledge must be considered. Knowledge of vocabulary items or vocabulary size is another crucial element affecting phonological intelligibility, and is a factor that only native speakers intrinsically possess (Thornbury, 2002). Bradlow and Pisoni (1999) claimed that for NNSs they had more problems in dealing with difficult lexemes when perceiving connected speech rather than NSs do. Given insights regarding the mental lexicon advantage of NSs, it was not surprising intelligibility scores for the moderate accent, as transcribed by Thai participants, dropped slightly from the weak accent (87% and 91%, respectively), while NSs intelligibility scores were slightly higher in the moderate condition than the weak condition (92% and 91%, respectively). Thus, in the moderate accent; though stronger in accent, containing more technical lexemes, Thai listeners' intelligibility scores were lower when compared to NS and recorded 87% while NSs recorded 92% intelligibility.

Nevertheless, the advantage of mental lexicon or vocabulary size of native speakers of English was not as significant as familiarity to the accent of shared L1 listeners previously mentioned. The overall intelligibility scores across all conditions between NSs and Thai participants indicated that Thai listeners outperformed NSs regarding the intelligibility of Thai English pronunciation. Such benefits have been coined using various terms; for example, speech intelligibility benefits (Bent & Bradlow, 2003; Algethami *et al.*, 2010), interlanguage match (Anderson-Hsieh & Koehler, 1988; Biblow, 1989; Brown, 1968; Eking, 1982; Richards, 1983; Hardman, 2014), and accent calibration as known in

the speech synthesis field (Barry *et al*, 1989). Overall, the terms noted convey the idea of the ability of listeners to make rapid correlations between different sounds of the presented language with sounds features of the listeners' own accent. It has been established that shared L1 listeners are better at understanding the accent of L2. In other words, the advantage of English mother tongue of NSs, though considered as an intelligibility aid, is not as prominent as accent familiarity or shared L1 benefits in EIL communication. This is highlighted in the analysis of intelligibility from the strong accent condition, which contained less specific technical terms. NSs intelligibility scores dramatically dropped to 72% from 91% and 92% for the weak and moderate accent respectively. However, Thai listeners obtained 95% in this condition, which was considerably higher than that of the weak (91%) and moderate (87%) accent conditions.

As revealed by the literature review, reports of the association between intelligibility and accent as well as the advantages of listeners' background language were inconclusive. The present research asserts that lexicon complexity and accent familiarity are the two main factors positively affecting intelligibility. To elucidate, there are two types of familiarity advantages on intelligibility – accent familiarity and vocabulary familiarity. The benefits of these two factors are possessed by shared L1 interlocutors and English native speakers differently. This study claimed that in general speech, where technical terms are not included, shared L1 listeners with higher familiarity to the accent can comprehend the speech better than English NSs. However, English NSs perform better only when the speech contains sophisticated lexicons, such as technical terms, which employ the intrinsic ability of mother tongue speakers and top-down process language skills to cope. The implications for EIL pedagogy and teaching surround the issue of vocabulary size, that a wider scope in vocabulary training should be considered as another factor enhancing phonological intelligibility. A further deliberation, out with the remit of this study, regards how to encourage native speakers of English to explore more foreign

accents, which will consequently increase familiarity for better understanding in EIL pronunciation.

5.2.3 Effect of Non-Nativeness and Non-Shared L1 on Foreign Accented Speech Intelligibility

This group of participants were non-native speakers of English and also non-Thai speakers (NNs). Transcription analysis demonstrated that NNSs exhibited the lowest level intelligibility scores when comprehending Thai-accented English pronunciation. In addition, the level of intelligibility significantly dropped with increasing accentedness. These findings can be discussed in parallel with their counterparts above. While shared L1 and English nativeness are important factors of intelligibility for EIL communication, non-shared L1 and non-nativeness of English groups of participants created more obstacles for the speaker, producing speech with a high level of intelligibility. In EIL however, the main purpose of using English for communication is not only to understand people with shared L1 or those coming from Anglophone countries, but also those who do not share L1 or are non-native speakers of English; the major users of English in the world (Smith & Nelson, 2009). This matter; therefore, brings serious attention to the study of NNSs of differing L1s in EIL. It is agreed in line of phonological intelligibility literature that when the speech contains phonological traits that differ from the listener's speech sound system, intelligibility is negatively affected (Eisentein & Berkowitz, 1981; Anderson-Hsieh & Kehler, 1988; Jenkins, 2003; Hannah, 2004; Field, 2005). This leads NNSs to feel uncomfortable when trying to perceive foreign accented speech because they have to put extra effort into reparing phonological distortions (Fernandez & Gonzales, 1988; Puerto *et al.*, 2015, p. 204). Grimes (1989) contended that the greater phonological distance between the two varieties, the less mutual intelligibility occurred. As empirically demonstrated in Jenkins' (2000) interlanguage talk (ILT) trial experiment, the substitution of certain sounds tends to cause more problems for NNS than those sharing L1 or having English as their mother tongue, because they have a "narrower band of allophonic

tolerance" than the other two groups of participants (p. 20). In addition, they were "less sure" of forms of language such as syntactic structures and vocabulary which, when combined, resulted in an inability to differentiate whether the confusion in speech recognition was from their unfamiliarity or mispronunciation. Consequently, NNS participants exhibit a higher dependency on the phonological form due to a lack of shared linguistic background, driving them to focus on acoustic signal only (p. 82). As a result, the stronger the L2 accent, the less speech recognition of L2 listeners (Ockey & French, 2014).

The inability of listeners to accommodate non-L1 speech input into L1 structure results in a reliance on real acoustic structure: bottom-up processes (Cutler *et al*., 2006, p. 111). In other words, NNSs are inclined to apply the inappropriate listening strategies of their L1 to the foreign language when encountering unfamiliar words, which can also be observed in high L2 proficiency listeners (Weber & Cutler, 2006; Cutler *et al*., 2006, p. 106). Nevertheless, when encountering unfamiliar sounds or non-shared pronunciation of speech, NNSs are forced to revert to an over-reliance on bottom-up processing which is a pure focus on acoustic signals (Jenkins, 2000, p. 20). The present transcription results echoed such claims as NNSs employed considerably higher levels of pseudo transcription, indicating that they were unsure and struggled to perceive the utterances. In addition, the way NNS participants spelt the sound through pseudo transcription substantially deviated from the targeted speech, particularly when compared to the transcription by NSs or Thais. These latter two groups of participants' transcriptions, both in orthographic and pseudo transcription, were further analysed in terms of deviation from the pronunciation of the targeted speech and reference standard pronunciation. However, that of NNSs was frequently too varied to be included in the analysis. Table 5.1 provides examples of transcription from each group of participants

Table 5.1

Examples of Transcription from Three Groups of Listeners

"Probably"

- Standard pronunciation – [prɒbəbli]

- Speech Sample pronunciation – [prɔmli]

NSs		Thais		NNSs
Orthographic Transcription	Pseudo Transcription	Orthographic Transcription	Pseudo Transcription	Pseudo Transcription
Primarily	Promlee	Promptly	Promni	Poorganis*

In this word, the majority of NNSs used pseudo-transcription.

The pattern of transcription data revealed that NNS encountered more difficulties in the perception of L2 pronunciation than the other participant groups. In addition, although relying on acoustic channels, NNSs perceived the sounds far differently from those sharing either L1 or L2 with the speakers. Therefore, when communicating with NNSs - who do not share L1 or are not the native speakers of English – it is essential that speakers are clear in their pronunciation. The critical analysis demonstrated that in such communication scenarios, the weaker level of foreign accent was shown to efficiently facilitate intelligibility. The situation is more prominent when the communication takes place in a group of NNSs with more than one L1. The data indicated that NNSs from the same L1 (selected L1s of NNSs in this study were Arabic, Spanish, Portuguese, Japanese, and Chinese) perceived foreign accented speech sounds in the same manner and those from different L1s tended to perceive the sounds based on the features of their own L1. For example, all three of Portuguese listeners transcribed the pronunciation of management as minute main and all three Japanese listeners transcribed management as Manchester. Although participant numbers were low for each L1 group of NNSs in this study ($n = 3$) and thus cannot be generalised, it is clear that the perception pattern in perceiveing foreign

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accented sounds was based on L1 of the listeners and even those from the same L1 showed very unique sound perception. Overall, NNS participants found English speech with higher levels of foreign accentedness more challenging to comprehend, however, their misperception of sound (as highly deviated from the target words in the transcription) appeared to be arbitrary. This does not imply that the research claims superiority of native-like proficiency for intelligibility, as the results demonstrated weaker levels of accent predicted higher levels of intelligibility. A noteworthy consideration, raised by the findings, relates to the matter of where the line should be drawn between the need to improve the speaker's speech for higher intelligibility and the need to improve the flexibility and exposure to foreign accents of English among NNS listeners. In line with the new global pluricentric paradigm, where there is a drive for the legitimisation of different varieties of English, this debate is of vital and increasing importance.

5.2.4 Debates on Native-Like Pronunciation for International Intelligibility

The current research was an examination into phonological international intelligibility using three types of English listeners: NSs, NNSs and Thais as participant samples. This allowed for a more fine-grained study regarding intelligibility of EIL to be conducted in relation to the acoustic perception of foreign accent of English. International communication under the EIL framework is dominated by NNS-NNS interaction, where acoustic perception of listeners is diversified via interloctuors L1. Consequently, intelligibility difficulty increases with the distance between interlocutors' first language (Jenkins, 2000). There has been a shift in paradigm from the previous monolithic model of English, where NSs have the "exclusive prerogative" (Kachru, 1985, pg.30) to shape and set its standards, to an acceptance and promotion of the multifaceted and pluricentric nature of English in its contemporary context. As proposed by EIL defendants such as Jenkins, Kirkpatrick, Seidlholfer and others, endonormative varieties of English should be promoted for increased awareness to allow for the successful promotion of English as the language of the world. Intrinsic to this assertion is the right for NNS to express their

regional identity by means of their accent (Jenkins, 2002). For international communication, a reformulation of Bourdieu's (1977) concept of *legitimate discourse* is required. The concept encompassed the notion of legitimate phonology and syntax, which when viewed through the lense of the old paradigm, required an adherence to NS norms. The current shift in perception of the global position of English dictates that norms should now be of an international standard that promotes cultural and linguistic diversity while maintaining communicative competence. Therefore, the speakers of English require nothing more than comfortably intelligible pronunciation (Abercrombie, 1949; Munro & Derwing, 1995a). There is an irony surrounding the requirement for NNS to approximate NS models of pronunciation when there is acceptance of regional variation within NS accents. Furthermore Crystal (1995) attested that there are now less than 3 per cent of British English speakers using RP. Kirkpatrick's (2002) assertion that standard English does not exist is understandable in this context. This assertion underpins the several reformulations of the term English native speakers used throughout the literature that attempt to avoid the sense of ownership of English, such as English fluent users and English monolingual users. As the fiercest defendant of the right to use endonormative pronunciations of English, Jenkins, in her range of works, claims that the drive to eliminate L1 accent of the speakers can limit the ways the speakers want to express their linguistic identity. In a nutshell, in the arena of EIL, a promotion of the cultural and linguistic diversity of global English is required, with a recognition of international norms of communication to replace the idealised NS norms. There is a wealth of research supporting this contention originating from Smith and Rafiqzad (1979) of which asserts nothing is considered "good" or "better" about the "native" accent (Kachru & Nelson, 2006, p. 72). Smith (1992) postulated that often, native speakers of English demonstrated the least intelligibility in NNS communication settings. The issue of accent and intelligibility was raised in a way that they were not bound to each other, weaker accent did not mean the best intelligibility (Munro & Derwing, 1995a). As a result, the

perception of foreign accent as bad, and should be treated or intervened by accent reduction programs (Catran, 1985; Ferrier, Reid & Chenausky, 1999; Seferoğlu, 2005), is strongly rejected by pronunciation experts in EIL and in exchange, natural speech with comfortable levels of intelligibility, is viewed as the ultimate goal of communication (Jenkins, 2000, 2002, 2007; Seidlholfer, 2004; Spichtinger, 2001). Learners with an accent should not be viewed as having errors or pronunciation issues, and should be free from the notion of achieving a clinically normal native accent (Griffen, 1991). This is the current shift in paradigm regarding English in its global use, to move English usage away from the native fallacy concept (Phillipson, 1992).

Arguably, the results of this study challenge all claims raised above, that level of foreign accent does not affect intelligibility and that more native-like (or weaker level of foreign accent) English pronunciation does not lead to the better intelligibility. As indicated by the results, although Thai accentedness in English pronunciation, even at the strongest level, was intelligible for international listeners, a decrease in accent led to an increase in intelligibility for those participants who were non-Thai. Therefore, based on the findings, it is clear that to communicate with people from different L1, the weaker degree of foreign accent or more native-like, near native or near standard pronunciation the speaker possesses, the more comprehendible the speech is to listeners.

Additionally, it is stated that the goal of communication is bound to the process of convergence; that speakers adjust their speech to make it more comprehensible to particular interlocutors and settings as this is the basic motivation in communication: that whenever we communicate, "we want to be understood" (Jenkins, 2000, p. 23). The data implies it is undeniable that level of accent in L2 speech needs to be adjusted to the listeners to allow for better comprehension. When communicating with people sharing L1, level of foreign accent needs to be reduced. Moreover, pronunciation, especially with an accent, is a continuum process. The current research clearly showed that weaker accentedness correlated to higher intelligibility scores. L1 accented English is more

permissible in the local context, as Thai participants demonstrated higher intelligibility scores when the accent was stronger. However, the data of the current study strongly indicated that two out of three groups of participants, who do not share L1 with the speakers, demonstrated higher levels of intelligibility when the foreign accent was weaker. Arguably, this research suggests that in using English for international communicative purposes, L1 accent should be reduced to a minimum and the use of English with L1 is in doubt for reaching the highest level of international intelligibility. This does not mean that NNSs must attain native-like accent and fluency, but suggests that L1 accent should be reduced where possible if one wishes to reach the ultimate goal of international intelligibility. Although, EIL authorities such as Jenkins, Kirkpatrick and Seidholfer fully support the recognition and promotion of non-native varieties of English, the current study has demonstrated that in achieving international intelligibility, minimum L1 accent in English pronunciation is required especially for the group of NNSs interlocutors who are the majority users of English in EIL context.

The results also demonstrated that when using English with shared L1 users or Thais, the stronger the accent was the more easily it could be comprehended. Therefore, Thai English L2 learners who aim to work in an environment of English usage among Thai people; the accent of the identifier of L1 (Jenkins, 2007) may be reserved and applied in such contexts to improve communication. Informally implied in English education in Thailand, Thais are required to practice two kinds of accent – native-like accent and Thai-English accent - in order to effectively communicate with different groups of people. Using an English native-like accent in Thailand can be indicative of the rejection of the persons' own identity and an ambition to gain higher social status (Buripakdi, 2008). This has resulted from English becoming the indicator of modernisation and a higher class of living in Thailand. Therefore, many English fluent users tend to use different accents – when using English with local Thai people, a strong Thai accent is adopted in order to be more alike. This follows convergence, or accommodation theory which is the adjustment

of pronunciation as well as other linguistic variables to the target language that the speaker wishes to identify him/herself as the given group (Giles, Coupland & Coupland, 1991). To illustrate, for Thais, when speaking English in their endonormative context, their accent should be stronger and local like in order to express a feeling of unity among people engaged in the conversation. This is mostly done by code switching. For example, whenever an exonormative standard of English is used in a local context, such as pronouncing English loan word capsule as [kapsjuːl] instead of [kæpsun] in local pharmacies in Bangkok, a lot of attention can be drawn and the speaker risks causing offence. This occurs in the pronunciation of many English product brands as well, such as Benz as [ben] (with rising tone) and other English loan words such as strawberry as [satɔwbɔli] (with heavy end stress). The Thai production of such English words is a result of the influence of their Thai phonology system, further reinforced by the spelling system (elaborately mentioned later in 5.3) which drives an assumption of legitimacy in pronunciation, which can even make it difficult for the real English context to be understood (Smith, 1987). Similar cases are evidenced in other Expanding Circle countries such as Japan in the use of Katakana letters for all imported foreign languages. Essentially, the use of Katakana is the attempt to make all foreign sounds fit into the limited set of L1 sounds. This has resulted in the misperception of these words by other English speakers from different L1 as they do not know whether those pronunciations are derived from English. This is due to the limited spelling system which considerably deviates the pronunciation from the standard English. Consequently, to use English with Thais and more specifically local Thais, endonormative standards are desired to gain higher intelligibility which is converse to communication with NSs and NNSs where the use of an exonormative standard is essential for intelligibility. However, in the context of EIL, the primary use of English is between NNS interlocutors. Therefore, Thai EIL pronunciation pedagogy must consider the association between accent and intelligibility to develop teaching materials that help facilitate teaching and learning with the goal of

achieving international intelligibility via exposure to multiple varieties of NNS accents (Jenkins, 2002).

This premise underpins the rationale of LFC by Jenkins (2000) that in English L2 pronunciation there should be a minimum standard provided to safeguard intelligibility in communication. This is not to suggest that all sounds should be pronounced as native-like, even though they may bring the best intelligibility to all international users of English. However, based on the concepts of teachability and learnability as coined in LFC, it is impossible for English L2 learners to acquire all English phonological features and imitate for production as NSs do, especially within a classroom context where the majority of their interaction will be with speakers from the same L1. In addition, such attitudes will increase the burden on learners in the use of English for intelligibility purposes. Therefore, a detailed core of minimum standard pronunciation features for intelligibility should be established and the features that threaten intelligibility should be given focus in teaching. Additionally it was suggested the core should be mainly used for assessment. By the same token, the core must not prevent individual learners practicing native-like pronunciation if they desire. Above all, interaction with interlocutors is the ultimate goal for the learners to develop their speech to reach intelligibility. Endonormative standards were demonstrated as more acceptable and intelligible for Thai participants, hence, pronunciation with an L1 accent within a group of shared L1 interlocutors is more permissible. However, given the number of interlocutors in EIL, the listeners consist of mainly non-shared L1, thus, more careful pronunciation is required, achieved by focusing on those features that lead to intelligibility failure. As a result, a growing number of scholars e.g. Spichtinger (2001), Seidlholfer (2004), and Scales *et al*. (2006), propose a reconceptualisation of EIL pedagogy; instead of one single pronunciation model, learners should focus on learning the features of a variety of accents. Specifically, local pronunciation, or endonormative standards, should be learnt as another form of appropriate English for local context communication purposes. However, in communication with

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people from different L1's, endonormative features should be reduced to maintain international intelligibility. Nevertheless, as a native speaker, the pronunciation of a foreign language with a local L1 accent is automatically acquired without explicit training. In conclusion, local accent should be retained when communicating in local contexts and reduced when communicating with people from different L1 (Jenkins, 2000).

The next section of the chapter focuses on the discussion of sound features that should be included in Thai EIL pronunciation core.

5.3 Thai EIL Pronunciation Core

As aforementioned in Chapter 4, in the current study of phonological intelligibility of Thai English pronunciation to different groups of international English listeners, there was a total of 157 content words uttered in the speech samples (spontaneous connected speech) collected from three Thai speakers whose accents were ranked through weakest to strongest. Of the entire 157 content words, 16 were found unintelligible to more than 50% of the overall participants and participants in each L1 group. In EIL research, there has been a predominant focus on the intelligibility level of individual accents to particular groups of listeners.

However, there is a dearth of studies, none for Thai English studies,that have examined which phonological features led to differences in intelligibility. In the majority of studies reviewed, the speakers' speech and participants' transcriptions were not analysed phonetically and acoustically, and the problematic phonological features were not recorded. This was particularly prevalent in English accents that are not the major ESL accents spoken worldwide, such as Thai English, which was the main focus of the current study. As demonstrated in the empirical data, which is in the line with the majority of Thai English phonology studies, the pattern of these Thai non-standard English pronunciation features leading to intelligibility failure can be shown as follows.

Table 4.13

Thai EIL Pronunciation Core

Segmentals	Features	Examples
Consonants	Clusters: Final Cluster: lack of final release	Dropping of the final segment such as [t] in "manageme<u>nt</u>" and [n] in "desig<u>n</u>", etc
	Initial Consonant Insertion	[dr] as [dʷ] in "<u>dr</u>essing"
	Initial Consonant Deletion	[bl] as [l] in "proba<u>bly</u>"
	Substitution of sounds in final syllable position	[l] is substituted by [w] in "environmenta<u>l</u>" [b] is substituted by [m] in "pro<u>b</u>ably" [θ] is substituted by [t] in "fur<u>th</u>er" [dʒ] is substituted by [s] in "ma<u>nage</u>ment"
	Voiced pronounced as voiceless	[z] is substituted by [s] in "de<u>s</u>ign" [ʒ] is substituted by [ʃ] in "<u>g</u>enre" [v] is substituted by [w] in "en<u>v</u>ironmental"
Vowels	Full stress is produced on unstressed vowel (schwa)	[mənt] as [men] in "manage<u>ment</u>" [təm] as [tem] in "sys<u>tem</u>"
	Vowel Heightening	[æ] as [e] in "<u>ma</u>nagement" [ɑ] as [ɔ] in "<u>ge</u>nre" [ɑ] as [o] in "hyp<u>o</u>thesis"
	Monophthongization	[iə] as [æ] in "lɛmænɪsim"
Syllable Structure	Reduction/omission of unstressed syllables	[rə] in "gen<u>re</u>" [bə] in "pro<u>ba</u>bly" [vai] and [rən] in "en<u>viron</u>mental"

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These phonological features of Thai English were found problematic for intelligibility among NS and NNS participants only, with both groups showing relatively similar problematic features. Thai participants did not demonstrate significant difficulty in understanding the pronunciation of Thai English in this study. On the contrary, the stronger the speaker's accent was, the higher Thai participants' intelligibility rate was. The identified problematic features in this study were all features in the pronunciation of Thai English previously presented in Chapter 2. Following the concept of LFC (Jenkins, 2000), the minimum standard of pronunciation of EIL intelligibility should be established from the features that were found a threat to intelligibility.

5.3.1 Intelligibility Threats of Thai-Accented English

Evidenced from the critical analyses, the majority of intelligibility issues arose due to an inexistence of those English sounds in Thai phonology. However, this discrepancy was not the only contributing factor. Though both Thai and English share certain phonological sounds, instead of facilitating Thai pronunciation of English, they resulted in greater disparity. In other words, the sounds that are closely mapped between Thai and English, such as /n/ and /d/, are not identical, for example, /n/ in English is more alveolar whereas /n/ in Thai is dental. Additionally, /t/ and /d/ which are more dental in Thai are alveolar in English (Kruatrachue, 1960). The results obtained provided further insight into other possible causes of mispronunciation that led to intelligibility failure, such as phonotactic constraints, sound distribution patterns, and the confusion of the spelling system of English sounds in Thai. The comparative phonological analysis of Thai and English will now be discussed alongside all possible predictors of mispronunciation to identify the similarities and discrepancies between the two sound systems. As there has been yet to be a thorough investigation into the phonological intelligibility of Thai English to listeners, the current research could only reference some studies that focused on intelligibility as measured from other NNS listeners along with an explanation of the Thai phonology system.

Jenkins (2000), in her establishment of LFC, collected data from English spoken by various L1 speakers from major ESL accents, of which Thai English did not belong. Her work revealed many pronunciation features that deviated from standard English pronunciation, however not all were found to threaten intelligibility, for instance the substitution of /θ/ as /t/ and /v/ as /f/. Later, Kirkpatrick (2010) investigated pronunciation features more specific to ASEAN speakers of English. The data was collected via a conference regarding Education in ASEAN from communication among delegates from ten nations where English is a foreign language such as Thailand, Vietnam, and Indonesia as well as where English is the second language such as Malaysia, Singapore, and Brunei. The analysis of the communications revealed that there were some non-standard features that threatened intelligibility. The findings of the current study can be compared with the major mispronunciation features mainly found in the two most widely cited works in the field, presented in Table 5.2 as follows.

Table 5.2

The Comparison of Sound Features Found as Intelligibility Threat

Non-Standard Features	Threats to Intelligibility		
	Jenkins (2000)	Kirkpatrick (2010)	Current Study
Omission/Reduction of Unstressed Vowel	*(not mentioned)*	*(not mentioned)*	Yes
Vowel Quantity (Vowel Length)	Yes	*(not mentioned)*	*(not mentioned)*
Vowel Quality (Vowel Position)	No	*(not mentioned)*	Yes
Voicing Quality	No	*(not mentioned)*	Yes
Cluster Simplification	Yes	Yes	Yes
Monophthongization	*(not mentioned)*	Yes	Yes
Lack of reduced vowels	*(not mentioned)*	Yes	Yes
Unstressed Syllable Omission	*(not mentioned)*	*(not mentioned)*	Yes

Note: Certain features that are rarely cited or mentioned in the literature of the field and that deviate from the characteristics of Thai English pronunciation are excluded here such as fortis and lennis sounds effect on proceeding vowel length and the use of dark [l] in Jenkins (2000) as well as stressed pronouns and heavy end stress of Kirkpatrick (2010).

The problematic features identified in the current study did not completely substantiate either Jenkins (2000) or Kirkpatrick (2010). The current research echoes Jenkins (2000) in the feature of cluster simplification as a threat to intelligibility only, and concurs with Kirkpatrick (2010) in the features of cluster simplification, lack of reduced vowels, and monophthongization. Also, additional features were found in the current study but never mentioned in the cited works, such as the omission of an unstressed syllable. However, it is worth noting that these three studies collected pronunciation production and perception data from different groups of language users and employed a

different methodology. Several methodological inconsistencies make comparisons among studies difficult and therefore, it is not surprising that the results of sound features found are not identical.

Nevertheless, it is interesting that given the different research methodologies employed, cluster simplification was considered the predominant non-standard feature affecting intelligibility, exhibited throughout all three research papers, and also famously mentioned in the literature of East Asian English works (Kachru & Nelson, 2006). Regarding this issue, Jenkins (2000) explains that cluster simplification can, in fact, be found in two forms – deletion and addition; for example, schwa paragoge, depending on the first language of the speaker (p.142). The case of deletion, such as the pronunciation of product as [pɒdʌk], poses more problems for intelligibility rather than insertion, such as the pronunciation of stroke as [sɪtrəʊk]. She explains that the addition serves to clarify consonants and thus increase intelligibility.

For Thai speakers in this study, as indicated in the results, the type of mispronunciation in cluster was in the form of deletion. Examples include [men] in manage<u>ment</u>, [sai] in de<u>sign</u>, and [li] in proba<u>bly</u>, indicating that this feature was driving most of the participants' failure to comprehend the pronunciation of this word accurately. There was also one cluster production that was found problematic for the listeners which was [dr] in dressing where the speaker used insertion to insert approximant /w/ which resulted in the pronunciation of another syllable as [dʷr]. Therefore, both insertion and deletion methods of sound management in clusters led to comprehensibility problems in this study.

In addition, the position of the cluster creates different problems for intelligibility. Jenkins (2000) further explains that the mispronunciation of initial cluster is a more serious problem than the medial and final cluster according to the rule of L1 elision. For example, in the words listen where that /t/ 's elision is obligatory, Christmas where /t/ is not a phonemic representation, and prompt and fact where the omission of /t/ is permissible

(p.142-143). However, this study identified two initial cluster features as problematic items: [dr] in dressing pronounced as [dʷr], which failed to be comprehended by most of the participants except English NSs, and [bl] which was pronounced as [li] only. These errors can be attributed to the fact that the two segment clusters /dr/ and /bl/ do not occur in Thai, in addition to the other English cluster such as /fr/, /fl/, /sm/, /st/. In this instance, Thais tend to either insert a short vowel, sometimes even creating another fully stressed syllable such as smoke as /samok/ or reduce one segment into a manageable sound pronunciation (Smyth, 1987, p. 346). The remainder of the clusters found problematic in this study were at the final position.

While Jenkins (2000) suggests that initial clusters pose more problems than medial and final clusters; Kirkpatrick (2010) focused more on final consonant clusters as the threat to intelligibility. This is because, more specifically to ASEAN English speakers, final consonant clusters are never pronounced, especially in Thai where clusters never occur at the final position. Therefore, when pronouncing "world", it is as /wol/, other typical examples of this problem are "firs", "Eas", "expec", "mon" (month) (p.74-75). Furthermore, final consonant simplification can be classified into three types as 1) drop one of the consonants, 2) vowel epenthesis, and 3) addition of a vowel when the initial sound is /s/ (Mesthrie & Bahtt, 2008, p. 128; Kirkpatrick, 2010, p. 75).

For Thai speakers, the most common type of consonant cluster simplification occurs at the final position of the word and in the pattern of deletion as noted earlier. This can be explained by the basic consonant distribution of Thai shown in Figure 2.1 as follows.

	Initial	**Medial**	**Final**
Thai	C	C	C
	CC	CC	
English	C	C	C
	CC	CC	CC
	CCC	CCC	CCC
	CCCC	CCCC	

Figure 2.1. Consonant Distribution of Thai and English (Kruatrachue, 1960)

Figure 2.1 clearly illustrates that consonant clusters are more common in English than in Thai, with up to four consonantal sounds permitted to occur at the final position. In Thai, consonant clusters never occur at the final position and only single consonants are permitted of which there are eight sounds as /p, t, k, m, n, ŋ, w, y/. Therefore, Thais employ the deletion technique to cope with the pronunciation of English final cluster by substituting them with one manageable single final consonant and omit rest of the sounds. In addition, in the process of cluster consonant dropping, it is common for Thais to drop the second segment rather than the first such as "pump" as "pum" and "perfect" as "perfec" (Smyth, 1987, p. 346). Given this information, the inclusion of cluster simplification in the Thai EIL pronunciation core is crucial, with focus given to pronouncing the two segments of the sounds accurately.

Substitution was determined as another influential factor affecting intelligibility. Critical analysis of the transcriptions highlighted the following substituutions within the stimli, and was displayed at the final position of the syllable, namely: [t] for [θ] in further, [t] for [dʒ] in management, [w] for [l] in environmental, and [m] for [b] in probably. This phenomenon is clearly explained in Smyth (1987), that when occurring at the final position, these English sounds: /d/ /θ/ /ð/ /s/ /z/ /ʃ/ /ʒ/ /tʃ/ /dʒ/, are substituted in Thai pronunciation with /t/ (p.346). This pattern of substitution is not random and can be claimed as rule-governed for Thai people. However, according to his work, the rule of

substitution of [l] is [n] but in the current study, the speaker used [w]. A suggestion for this is the fact that the use of [n] for [l] can be found in extremely strong Thai accents of English, stronger than that of the speaker representing the strong Thai accent in this research. Whilst classified as having a strong accent, the speaker had a good level of proficiency in English to undertake a degree in the UK. Hence, some features representative of stronger Thai accents may not be manifest in his accent. The speaker's use of [w] instead of [n] on the final [l] implies that he was trying to produce a sound that was not too much deviated from [l]. In other words, both /l/ and /w/ can still be classified as approximant and are comparable in terms of articulation. This is similar to another case, using [m] to substitute [b] in proba<u>bl</u>y which was not considered consistent enough to generalise in this study. This phenomenon is not common and is not found in the literature or previous studies, hence, can be attributed to the personal pronunciation of the individual speaker. However, [b] and [m], though possessing a different manner of articulation: plosive and nasal, respectively, share the same place of articulation: bilabial.

The final phenomenon discerned from the analyses was voicing. In Jenkins (2000) it is shown that the substitution of certain voiced with voiceless sounds such as /f/ with /v/ and /z/ with /s/ does not appear to lead to a failure in intelligibility and was thus excluded from the LFC. However, according to the findings from the current study, it was found that certain sound substitutions at the initial position of the word, including the pronunciation of voiced as voiceless, did lead to intelligibility failure. These findings echo Kirkpatrick (2010) indicating that the substitution of /t/ for dental fricative /θ/ can be found unintelligible for the international listener (p.80). This study found the problematic voicing sound substitutions leading to intelligibility failure were where: [z] was substituted with [s] in de<u>s</u>ign, [ʒ] was substituted with [ʃ] in <u>g</u>enre, and [v] was substituted with [w] in en<u>v</u>ironmental. Again, as noted by Smyth (1987), in pronouncing English sounds that do not exist in Thai, substitutions are made as follows: /w/ for /v/, /t/ or /s/ for /θ/, /s/, /d/ or /t/ for /ð/, /tʃ/ for /ʃ/ and /s/ for /z/. Therefore, the results of the current study support the

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phenomenon of Thai-English pronunciation in the field. The fricatives that do not exist in Thai phonology are /z/, /ʒ/ and /v/. To elaborate, in Thai, there are only three fricatives - /f/, /s/, and /h/ and all are voiceless. When examined in reference to all Thai English pronunciation features, fricatives pose the greatest challenge (Kanokpermpoon, 2007). Therefore, regardless of the position they occur, all voiced fricatives cause difficulty for Thai English speakers in accurate pronunciation. Thus, based on the data obtained, the current study asserts that the use of voiceless instead of voiced sounds at the initial position of English syllables leads to intelligibility failure and they, therefore, should be focused on and included in Thai EIL pronunciation core.

Jenkins (2000) places stress on the length of vowel or vowel quantity as the threat to intelligibility leading to its inclusion in LFC. However, her work states that vowel quality or the position of the tongue differs heavily among L1 varieties and hence does not affect intelligibility and should, therefore, be excluded from LFC (p.144). This is in accordance with Cunningham (2010b) who stated that vowel quality was a major indicator of what distinguishes one variety of English from another. The results from this study, however, contradicts that of Jenkins (2000) and the claims mentioned. That is, in this study, vowel length was not found to be a significant problematic feature in the error transcriptions, rather it was vowel quality or the position of the tongue in pronouncing vowels. To elucidate, Thai speakers in the present research tended to heighten the position of vowels while pronouncing, such as [æ] to [ə], [ɛ] to [e], [ɜ] to [ə], [ɒ] to [ɔ]. Such pronunciation led to failure in comprehension of participants, for example, [ɒ] as [ɔ] in genre and [ɒ] as [o] in hypothesis. In addition, this pattern of pronunciation was mostly displayed in the first syllable of the words such as [prɒ] as [prɔ] in probably, [ʒɑ] as [ʃɔ] in genre. This pronunciation was commonplace, and whenever such pronunciation occurred, the NS and NNS participants failed to comprehend the word as targeted but transcribed it as actually pronounced by the speaker. Only Thai participants could accurately interpret what word the pronunciation aimed for. Interestingly, this phenomenon of vowel

heightening was consistent across the mispronunciation of vowel data that was regarded unintelligible for the participants in this study. However, this form of Thai English pronunciation has never been mentioned in the literature before. Kruatrachue (1960) only reported that when pronounced by Thais, English front vowels may be further fronted and further backed respectively (p.90). As demonstrated in the current study the noticeable feature was vowel quality which is in contrast to the work of Jenkins (2000). Jenkins (2000) emphasises that vowel quantity (length) is stable across English L1 and therefore of greater importance in LFC over vowel quality (position of tongue) that differes across L1 varieties. In contrast, the results of this study demonstrated that such differences in vowel quality did affect intelligibility. Therefore, vowel quality should be included in the Thai EIL pronunciation core.

The complexities of vowels persists beyond voicing and includes the pronunciation of unstressed vowel (schwa) as a fully stressed vowel, such as [mənt] as [men] in manage<u>ment</u> and [təm] as [tem] in sys<u>tem</u>. Results obtained from the transcriptions reinforces that of Kirkpatrick (2010) in what is called "lack of reduced vowels" (p.80). Vowel reduction can be defined in several ways. Trask (1996) suggested that it was the phonological process in connected speech which makes a vowel shorter, less loud, lower in pitch, or more central in quality, or which neutralised some vowel contrasts in unstressed syllables. Generally speaking, the articulation of English mid-central vowel known as schwa and the process of reducing the full vowel into schwa form is considered a problematic area in English pronunciation to many foreign learners, and is perhaps the most complex aspect of English to learn (Pennington, 1996). Thais are not the exception to this observation, and the problem in this area is well recognised. Thais tend to pronounce every syllable with equal prominence which is the influence of their syllabic-timed language base, while English is stress-timed which requires a different weight of vowel in each syllable. Consequently, the influence of a syllable-timing in Thai English pronunciation makes the pronunciation of every syllable equal in weight of vowel

(Kirkpatrick, 2010). Such pronunciation resulted in intelligibility failure for participants who were not Thai in this study. However, Jenkins (2000) classifies this as weak form which is regarded as a suprasegmental feature rather than segmental. She specifies it in terms of the reduction and modification of vowel (length reducing) resulting in the schwa sound in function words, such as auxiliary verbs and prepositions, to draw the attention of listeners to content words. Nevertheless, she reasoned that this should be excluded from LFC because it is an unteachable item. In addition, the failure in producing this feature is not considered to affect intelligibility. It is clear that the scope of this weak form feature defined by Jenkins (2000) is in juxtaposition with the current study and Kirkpatrick (2010) which are in consensus.

The phenomenon of a lack of reduced vowels in the pronunciation of English can be observed in speakers of many other syllabic-timed languages such as French, Telugu, Yoruba, Singaporean English and most South East Asian languages. Deterding and Hvitfeldt (1994) describes that in the case of Singaporean English, for example, the pronunciation of weak form in function words, such as prepositions and auxiliary verbs, are pronounced with strong form – full vowel is used in most circumstances. As a result, the differences in the words conveyed in the message between content words and function words cannot be distinguished by the speaker of syllabic-timed languages (p 99-100). Deterding and Kirkpatrick (2006) also found that in English communication among ASEAN people themselves (all syllabic timed languages), syllable-based timing does not affect their intelligibility. By contrast for English NSs, such pronunciation is viewed as childish and annoying (Crystal, 1995). However, it is unavoidable to note that for proficient English pronunciation, the pronunciation of reduced vowel or schwa is imperative. Any mispronunciation of schwa is a significant indicator of a noticeable level of foreign accent and is the simplest way to detect the characteristics of syllabic-timed language (Ling & Deterding, 2002; Kirkpatrick, 2002, p. 186). In other words, the correct use of schwa is closely related to the perceived degree of native-like speech, especially in

running speech. Therefore, this feature must be included in Thai EIL pronunciation core.

Crystal (1995) examined the language of air traffic control and reported that syllable-timed rhythm was clearly exhibited. The implementation of syllabic timing was a consequence of a serious accident in aviation history caused by errors in comprehension. A lack of communication in English between a Tenerife airport traffic controller (syllabic-timed language) and German pilot (stress-timed language) resulted in 583 fatalities. This incident led to major communication and language training reforms in the airline industry. As a consequence, syllabic timing is adopted in English communication for air traffic control. Utterances must be articulated with extra clarity, and the use of full vowels instead of reduced vowels in unstressed syllables appears to help improve intelligibility in this situation – at least for the kind of short and critically important communication required in air traffic control. Regarding this point, stress-timing found in the natural speech of English does not warrant better intelligibility in all contexts of language use. Rather, intelligibility heavily depends on the situation – short isolated words or spontaneous and connected speech. This paper; however, explores the latter discourse and has demonstrated that the characteristics of syllabic-timing tend to pose more problem for international listeners.

Monophthongization is another very common and well-known feature of English in ASEAN. This sound feature was identified and established as a problematic feature in both this study and Kirkpatrick (2010) but was not mentioned in Jenkins's LFC (2000). The significant features identified was [juː] as [i] in ar<u>gue</u> and [iə] as [æ] in lɛmænɪsim. Kruatrachue (1960) states that in the pronunciation of English diphthong, Thais fail to glide and the plain sound is used. As illustrated by Richards (1967) the second element of English diphthong tends to be omitted in Thai English pronunciation. Therefore, increased awareness and focus on diphthongs must be given during Thai-English teaching and assessment.

An interesting phenomenon causing mispronunciation features was orthographic

interference as the pronunciation of [ɒ] as [o] in hyp<u>o</u>thesis found in the speech sample. The orthographic interference was absent from EIL literature but was recorded in the majority of Thai English phonology comparative studies such as Kruatrachue (1960), Richards (1967), Kanokpermpoon (2007), and Smyth (1987). It is simply defined as the influence of confusion in spelling on pronunciation. This mismatch between pronunciation and spelling in English has shown to be considerably problematic for pronunciation of newly encountered words for Thai English learners (Smyth, 1987); for example, both /ð/ and /θ/ is spelled as *th* and the ability to accurately distinguish between the two sounds sharing the same spelling form is considered an innate ability of NSs. Kanokpermpoon (2007, p. 61) also notes that Thai English learners with low proficiency have difficulty in pronouncing the /ŋ/ sound correctly when it is followed by suffixes such as {-er}. They tend to pronounce it as /k/ and cling to the form of g preceding that suffix. In the current study, /ɒ/ was pronounced as /o/ in hyp<u>o</u>thesis because the letter o is represented for the sound /o/ rather than /ɒ/ in the common perception of Thai English learners. The situation is further exacerbated when English sounds are represented by Thai spelling, for example, in the Thai system of spelling final consonant, the letter p is used to correspond to all /pʰ/, /p/, /b/, and even /f/ (Kruatrachue, 1960, p. 103). The use of the Thai spelling system of English words may cause confusion regarding the pronunciation. As can be seen from the case of monophthongization above, where the speaker pronounced diphthong [iə] as [æ] in lesb<u>ia</u>nism, may have resulted from a lack of the knowledge in pronouncing the diphthong correctly as this English diphthong cannot be spelt by Thai orthography. Hence, the use of monophthong was viewed as accurate pronunciation. Therefore, it is suggested that in Thai EIL pronunciation especially in early stage spelling systems, it is critical that both English and Thai need to be redefined.

The last feature identified through the analyses was the reduction/omission of unstressed syllables. While this feature can be viewed as suprasegmental, it was clearly identified as an indicator of intelligibility failure in the present research and is therefore

raised here as the last supplementary point. In this study, it was found that the pronunciation of probably was pronounced as [prɔmli] with two syllables instead of [prɒbəbli] with three syllables, genre as [ʃɔŋ] with one syllable instead of [ʒɑnɾə] with two syllables, and environmental as [ɪnwatɔ^w] with only three syllables instead of [ɪnvaɪrənmentᵊl] with five syllables. As indicated, the unstressed syllable as underlined was completely omitted by the speakers, which, confounded by other pronunciation errors (if any), led to participant intelligibility failure. Interestingly, this characteristic of pronunciation was not mentioned in any research reviewed. This point; nevertheless, may be linked with the issue of rhythm or pronunciation of unstressed vowels as mentioned previously. It is likely that the speakers were aware that in some words there should be some syllables omitted or pronounced with a lower weight of sound, but lacked the ability to spot the reduction point since this was not the phonotactic pattern of their L1. Their choice of syllable omission was random or fell to the syllable that led to most difficulty in pronunciation rather than the reduction process found in NSs. This phenomenon was more apparent in long words with more than three syllables such as environmental, that the speaker pronounced as [ɪnwatɔ^w] instead of [ɪnvaɪrənmentᵊl]. As previously mentioned, the speaker merged unstressed [vai] and unstressed [rən] as one fully stressed syllable as [wa] (with other mispronounced sounds as well), indicating that the speakers tended to omit or merge certain sounds in the word, however, the place of omission and reduction was not accurate to the pronunciation of NSs. In summary, Thai sample speakers did not maintain a clear position between omission and reduction of unstressed syllables. However, given the small sample used in this study, the results cannot be generalised and consideration should be given to further study in the field, especially consideing the number of syllables pronounced was critical to the intelligibility of the entire targeted word.

As discussed, each word that failed to be intelligible, as noted from error transcriptions, can be the result of one or a combination of pronunciation errors related to

the mispronunciation of sounds and the position of the pronunciation errors as well. This issue is addressed in the next sub-section as follows.

5.3.2 Summary of Thai English as an International Language Pronunciation Core

While it is indicated that the significant features of pedagogy should be based on the frequency of mispronounced features, function load, and shibboleths or stigmatised senses (Ling & Deterding, 2002; Kirkpatrick, 2002), results obtained indicated that all general characteristics of Thai-accented English pronunciation, as synthesised and described in Chapter 2, were found to impede international intelligibility (Table 2.7).

Table 2.7

Comparison of Phonological Segmental Features between English, Thai-English, and Thai

Aspects	English sound system	Thai – English	Thai sound system
Devoicing	/z/, /dʒ/, /ʒ/, /g/	**/k/, /kʰ/ used instead of /g/** **/s/ used instead of /z/** **/tɕ/ used instead of /dʒ/** **/tɕʰ/ used instead of /ʒ/**	No /z/, /dʒ/, /ʒ/, /g/ in Thai (systematic gap)
Shift in terms of place and/or manner of articulation	Interdental fricatives /ð, θ/ and voiced labio-dental fricative /v/	**/t/, /d/, /f/ used instead of /ð, θ, v/**	No /ð, θ, v/ sounds.
Reduced initial aspiration	Aspiration occurs in the ONSET; unaspirated consonants only occur after /s/	**Aspiration is used interchangeably.**	Contrast between aspirated and unaspirated sounds
Deletion of final consonants	Final consonants can be in a cluster form.	**A cluster is pronounced as a single consonant.**	Final consonant is not in a cluster form. In a single form, fricatives do not occur.
Cluster reduction	Clusters in the ONSET and CODA vary.	**Deletion of cluster**	Clusters in the ONSET occur only /l, r, w/, no CODA cluster
Stress in words	Stress patterns are fixed.	**Variation in use of stress**	No stress patterns
Lack of reduced vowels	Vowels in unstressed syllable are reduced to schwa (Weak form).	**No reduced vowels or weak forms**	No stress distinction by terms of tones
Monophthongization	Glides	**Glides omission - diphthongs with glides are pronounced as plain vowel**	No glides

From the personal perspective as an English teacher, this can be considered facile in EIL pedagogy in Thailand, that all Thai-accented features in English require focus in international communication rather than specifically paying attention to some features over others. The Thai-accented English features from the current research and Thai English phonology literature (as in Table 2.7) can be summarised according to Jenkins' (2000) LFC, which included features that caused intelligibility failure among international users.

5.3.2.1 Lack of final release consonant. A recognised characteristic of Thai English pronunciation occurs when the final consonants are voiceless plosives: /pʰ/, /tʰ/, /kʰ/. Thais tend to pronounce them with an inaudible release resulting in /p̚/, /t̚/, /k̚/. In addition, when final positions are consonant clusters, the Thai speaker omitted the final segment of sound with such phonological behaviour resulting in intelligibility failure to the listeners. In addition, in this case, content words were not considered as critical as function words when speakers fail to pronounce /t/ of {-ed} as in picked. Therefore, the ability to pronounce final consonants accurately is considered crucial for EIL intelligibility.

5.3.2.2 Failure to produce certain initial clusters. The insertion of a short vowel after the first segment of the cluster in an attempt to create the new fully stressed syllable in initial clusters that do not exist in Thai such as /dr/, /sw/, /fl/ further confounded intelligibility.

5.3.2.3 Sound substitution. For English initial sounds, when there are no equivalent sounds in Thai including voiced sounds, the following substitution occurs - /w/ for /v/, /t/ or /s/ for /θ/, /s/, /d/ or /t/ for /ð/, /tʃ/ for /ʃ/ and /s/ for /z/. Similarly, when English final consonants are /d/ /θ/ /ð/ /s/ /z/ /ʃ/ /ʒ/ /tʃ/ /dʒ/, they are substituted by Thais with /t/. These patterns of sound substitution led to intelligibility failure in listeners.

5.3.2.4 Monophthongization. As Thai does not have glide, when diphthong with glide occurs, Thais tend to drop the second element of the vowel and pronounce the plain

vowel. This resulted in intelligibility failure in the present study. The problem is highlighted in centering sequence diphthong such as /iə/, that it may be pronounced either as two syllables separately or pronounced in a way that the second segment is less prominent than the first one. Simplification of diphthongs is widely found in East Asian English.

5.3.2.5 Lack of reduced vowels. Differences in language timing results in discrepancies in vowel production. The syllabic-based timing of Thai requires equal weight on every syllable. This transfer to English pronunciation, in which there is a natural use of unstressed vowels in speech results in an impediment to speaker intelligibility. Generally speaking, English weak vowels are not as weak as they should be when pronounced by Thais.

5.3.2.6 Heightening vowels. Thais tend to heighten the position of a vowel from the accurate pronunciation in English. Though not reported in the literature reviewed, this study found that this feature occurred consistently across the data and led to a failure in phonological intelligibility among participants.

5.3.2.7 Omission/reduction of unstressed syllable. As stress is not in Thai phonology, both unstressed vowels and unstressed syllables are a source of difficulty for Thais in their production of English. The current study revealed that when encountering unstressed syllables, Thai speakers have two strategies: first to make it fully stressed or to drop it completely. Both cases led to intelligibility failure.

While these features were identified as problematic, the occurrence of a single feature was not regarded as significant enough to result in unintelligibility of the word. Rather, it was the combination of multiple features that led to the failure in comprehension of whole words. In other words, it is alleged that if there was only one mispronounced feature in the word, than intelligibility of the word should not be totally unsuccessful. For example, in the pronunciation of design as /dɪsaɪ/ instead of /dɪzaɪn/, the errors in pronunciation were the substitution of voiced /z/ as voiceless /s/ and lack of final

consonant cluster release: dropping /n/. With such pronunciation, most participants with the exception of Thais, transcribed this word as decide. Therefore, it is noteworthy that when only one error occurred, the participants perceived this word more accurately to the targeted word. Nevertheless, the more problematic features that can be eliminated from the pronunciation, the better the utterance can be comprehended.

Moreover, from the analysis, mispronunciation in vowels was shown to cause more problems than in consonants. This finding supports previous results, such as Cunningham (2010b) who stated that error in consonant articulations was less salient than vowel quality. Munro *et al*. (2006) also said that intelligibility was higher in words with more vowels. Throughout error transcription, participants perceived consonants relatively close to the targeted words (as pronounced by the speakers). In contrast, mispronunciation led to misperception of vowel sounds and consequent higher rates of intelligibility failure. To elaborate, when mispronunciation occurred in a vowel, the perception of the participants was too far deviated from the targeted words. For example, in lesbianism which was pronounced as [lesmænɪsm] instead of [lɛzbiənɪzm], the majority of participants perceived the sounds in the first syllable accurately. However, when diphthong [iə] was pronounced as [æ] (with the full stress), the subsequent syllables were not recognised (except [n] [s] and [m] that were somehow caught by some participants). Also, the pronunciation of an extremely common word one, pronounced with vowel [ɒ] instead of [ə] or [ʌ] in standard English, although the neighbour sounds were pronounced correctly as [w] and [n], surprisingly almost all of the participants except Thais failed to transcribe this word as targeted but perceived it as what which is more likely to be pronounced with vowel [ɒ] in English L1 varieties.

The position mispronunciation error was also demonstrated to have a critical effect on intelligibility. From the analysis, it was found that in a word with more than two syllables such as environmental, hypothesis, and management, if errors occurred consecutively in the first two syllables, the proceeding syllables were not mapped to the

targeted word regardless of how it was pronounced. The case was even more prominent in words with one or two syllables such as dressing, [dr] pronounced as [dʷr]. Although the rest of the sounds were pronounced accurately to the standard pronunciation of English in all sources, failure in pronouncing the initial sound was critical and resulted in a mismatch to the targeted word. These sound features of Thai English pronunciation are therefore a necessity in teaching EIL pronunciation in Thailand and for Thai learners for international communicative purposes. They are also the features that should be included as the minimum standard of Thai English pronunciation for safeguarding international intelligibility so-called the Thai English pronunciation of EIL intelligibility core.

Rules are never black and white, and there are often criticisms and exceptions. The LFC, and other possible phonological cores as the facilitator of international communication, are not exempt and many critical points need to be considered by the practitioner. The LFC has faced criticism as a simplified version of standard English. Furthermore opponents of the core have postulated that its use will result in reduced intrinsic motivation of language learners that wish to practice their pronunciation as close to native speakers rather than attach to L2 accented (Major *et al*., 2002; Major *et al*., 2005; Scheuer, 2005; Van den Doel, 2006; Van den Doel, 2007). To alleviate some of the concerns surrounding the implementation of the LFC, this research suggests that the phonological core established as a threat to international intelligibility should mainly be used for EIL assessment rather than as a teaching model. It might be true that reaching native like competency seems impossible and creates nothing but a burden for learners, but as English teachers, we cannot prevent our learners from developing their ability beyond the minimum standard as the rationale of the core. As a result, within a classroom teaching context, standard or the native pattern of pronunciation is encouraged so that the learners are aware of the real pronunciation of the word by its native speakers whereas, but during an assessment, the established core should be the blue print rather than native-like pronunciation. That is, if there are some errors from the learners that are included in the

core, those features are supposed to be more strictly assessed in comparison to the non-core features. On the contrary, if the learners exhibit errors which are non-core features, these errors, whilst requiring correction, should not be considered a failure as they have been demonstrated as having no salient effect on intelligibility. It must be noted that just because a feature is non-core this does not mean that errors are permissible. For example, the non-standard feature such as devoicing in the word, the as de cannot be simply ignored because the LFC the substitution of /th/ by the other sounds is not an intelligibility threat. In fact, as the teacher, there is a requirement to promote awareness in the students regarding how their pronunciation is deviated from its origin and encourage the correct pronunciation depending on individual learner ability and factors. However, such pronunciation can be more permissible when it comes to assessment because it does not affect international intelligibility, judging that non-standard pronunciation as a failure is against the international communicative competency goal. More discussion regarding the application of the core as an assessment reference is drawn in the next section.

5.3.3 The Proposal of Implementing Phonology Core as a Language Assessment Tool

Regardless of how the pronunciation core; either LFC or ASEAN phonology core or Thai EIL pronunciation core, is analysed and established, this study suggests that any pronunciation core should be developed by English educators, researchers and authorities in the local area who are exposed to the socio-cultural context instead of being governed by NS scholars based in Anglophone speaking countries. As the local authorities of English pedagogy, their experiences of learning English as an additional language and shared L1 can enable them to develop language awareness and provide adequate linguistic information about the language to learners, anticipate their difficulties, and set realistic goals. In addition, this research suggests that the established core should be utilised in the assessment of communication skills of L2 learners, rather than used as a teaching model. In other words, during pronunciation teaching in class, especially in a formal education system, the focus should be on accent reduction because, as explained by standard English

authorities such as Trudgill, standard English can warrant all context of English usage (except within shared L1 users themselves). Under no circumstances will having a more native-like or weaker foreign accent negatively affect the users.

When errors are identified during assessment of English L2 learners' communicative skills, consideration must be given to their impact on intelligibility. If the errors are established as part of the core, it is imperative to advise and correct the pronunciation. This does not negate the necessity for assessment of non-core features; it simply transfers the onus onto attainting proficient communicative competency within one's own endonormative variety of English. Additionally, errors made outside the core should not be judged as failures as they are shown to have no salient effect on intelligibility. The core should inform teaching practices by providing data and guidelines on local features that impede intelligibility over providing a standard model of teaching. Whilst non-core features are regarded as less vital for intelligibility, such as the substitution of voiced as voiceless in the LFC, this by no means condones the encouragement or perpetuation by teachers of NNS learners to pronounce /s/ in all /z/ sound environments. Furthermore, even if cluster simplification was not identified as an intelligibility threat, it would be extremely misguided if a teacher encouraged the students to produce English with cluster simplification on the basis that it is their L1 influence and is not identified as threat to intelligibility.

It is absolutely agreed that for international communicative purposes there should be a minimum standard pronunciation set to safeguard intelligibility, additionally it is agreed that the attainment of native like proficiency for L2 learners is unrealistic as stated in LFC (Jenkins, 2000). However, this study suggests that the established core would be best utilised in assessing learners' communication skills in an authentic setting, rather than as a base from which to teach pronunciation. Regardless, within the concept of WE and EIL, it is the responsibility of language teachers to drive learners to acquire the targeted language to their highest potential and under no circumstances should the standard be

lowered (Liu, 1999). However, there are several limitations in language teaching that must be considered such as the unrealistic approximating of native-like fluency, including the load and burden for learners especially in classroom context teaching (Jenkins, 2000). Moreover, the pronunciation core would be a further concern in the mind of the teachers. It is undeniable that judging or assessing L2 learners against native-like competency is unfair, and learners should be respected as genuine users of the language. Learners must be encouraged to reach their full potential which may well exceed the minimum required for basic intelligibility.   Towards this end, there is a considerable body of work demonstrating that a great deal of learners of English do not wish to be taught by the non-native model (*Major et al*., 2002; Major *et al*., 2005; Scheuer, 2005; Van den Doel, 2006; Van den Doel, 2007). The underpinning premise of the LFC is the belief that as NNSs and English learners from the periphery, while their pronunciation is not native-like, it is not imperative to develop it further. However, with intrinsic motivation, and personal inspiration learners can practice and achieve pronunciation akin to that of native speakers. As such, although native-like pronunciation is difficult to attain and perhaps unrealistic, there is no negative consequence of having near native-like pronunciation if that is what the learner desires.

5.4 Intelligibility Predictors

Regarding intelligibility measuring methods, there is, to date, no universally accepted way of measuring intelligibility.   Though a number of works employed transcription tasks to elicit intelligibility level, including Hardman (2010), Matsuda *et al*. (1999), and Walt (2000), others employed subjective methods such as interviews and questionnaire ratings, such as Win (1998), Lu (2007), Narith (2009), and Pongpairat (2011).   Thus, the two main intelligibility measurement methods can be regarded as objective and subjective tests. The supplementary aim of this research was to examine the reliability of subjective tools, in particular rating methods used for measuring intelligibility level as a guide for future research. The main goal of this research was to elicit the sound

features that failed to be comprehended by the participants. Thus, the current study used transcription, under the pretense that objective tests extract more reliable data. Subjective tests such as an interview or a simple rating questionnaire were considered incapable of obtaining such information relating to acoustic perception. However, if the goal of future studies were intelligibility level, as opposed to problematic phonological features, it was worth examining whether the subjective ratings (questionnaire) in this study, were sufficient for determining intelligibility. The research helps to identify the possible indicators gained from rating methods for intelligibility and raises important implications in EIL intelligibility measurement. In line with literature, work examining the link between actual intelligibility and other factors such as accentedness, familiarity, perceived intelligibility, etc. largely followed the work of Munro and Derwing (1995a) and Derwing and Munro (1997) where actual intelligibility was measured from transcription tasks and additional variables were measured using Likert scale ratings, which allowed for cross checking of all variables.

The findings discussed in this section are considered supplementary fulfilment of the research to fill gaps found in the literature in terms of other possible indicators or predictors as collected from rating methods for intelligibility. There were three possible indicators measured for a causal relationship or as a reflection of intelligibility in this research; ratings in a) attitudes, b) familiarity to an international accent of English and 3) perceived intelligibility.

5.4.1 Attitudes

There is a natural link between language and attitudes. Wolff (1959; Jenkins 2007) states that the perception of people towards an accent relies not only on the intelligibility they possess, but also needs to be considered in tandem with language attitudes; the two are symbolically linked.

To date, there is a wealth of research exploring how language users viewed their own or other languages, varieties, dialects, or accents. These works solely investigated

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attitudes towards a language, and demonstrated that people had either a positive or negative attitude towards the language examined (Jenkins, 2007; Major *et al.*, 2002; Beinhoff, 2013). However, when linking the issue of attitudes and intelligibility to see if they were correlated, relatively few works were found. The issue is even more complex when it relates to the investigation of accents of one particular language rather than different languages and the results from research in this area are mixed. On one hand, it was found that intelligibility and attitudes were correlated such as Giles and Niedzielski (1998) and Patel and Roden (2008) while on other, the relationship between the two was not very clear such as Hilton *et al.* (2013) and Tan and Castelli (2013). The results obtained from the current research reaffirm those of the latter.

The holistic rating of attitudes towards each level of accent utilised in this study comprised of five impressionistic elements to be rated; acceptability, correctness, friendliness, pleasantness, and intelligence. With 45 respondents employed in this study and the use of Spearman Rho's for statistical analysis, the attitudes surveyed in relation to actual intelligibility level towards Thai-accented English pronunciation demonstrated that there was a weak positive correlation between the two variables ($r_s = .27, p < .001$). That is, the intelligibility of an individual was positively correlated to their attitudes towards the accent. In other words, a person that scored high in intelligibility would have a positive attitude towards the accent and vice versa. However, the weak correlation indicates that while people may have specific attitudes towards the accent they are listening to, such attitudes do not necessarily coincide with how much they can comprehend the speech. Tan and Castelli (2013) also discovered that when a person has a high intelligibility level, he or she can rate attitude items such as likability and desirability towards that accent in various ways. Therefore, intelligibility was not indicative of a desire to attain a level of speech that was intelligible. Furthermore, in the current study, regardless of the level of intelligibility, the participants rated their attitudes in an inconsistent manner which resulted in a weak positive correlation between attitudes and intelligibility. Similar to previous

studies that recorded a weak relationship, the researcher is extremely reluctant to identify the causal relationship between these two factors. Although the data is not indicative of a strong link between attitudes and intelligibility, due to the positive correlation demonstrated, the researcher suggests consideration of these factors in future research with larger sample sizes.

Furthermore, the results from this study do not fully support the Social Connotation Hypothesis of Trudgill and Giles (1978); that attitudes are influenced by social connotations such as politics, economics, cultures, and personal experience, rather than linguistic elements. On the contrary, the findings support the hypothesis of researchers such as Boets and De Chutter (1977) suggesting that attitudes are based on linguistic issues (intelligibility of the target language to the speaker), as intelligibility scores and attitudes demonstrated a weak but positive correlation. A thorough investigation into the relationship between the two factors is needed.

Interestingly, it should be noted that it is possible that the attitudes displayed may not relate to intelligibility, but to the smoothness in processing the message in the speech as well. In other words, speech that was intelligible (high intelligibility scores) to the listeners was found irritating and ridiculous to process (negative attitudes rating) as discovered by Van Den Doel (2007). It is conceivable that the listeners revealed negative responses to speakers with accents because of impatience and inexperience with the nonstandard accent rather than their actual intelligibility. Mettler (1989) also found similar results with English listeners, who tended to exhibit negative judgements to the utterances even though they were able to comprehend the stimuli. The results demonstrate that attitudes are not bound to intelligibility, but can be influenced additional variables, which provides an explanation for the weak correlation in the current study.

A further two possible indicators of intelligibility to be discussed are considered innovative to the field. None of the works in the EIL field reviewed had investigated the link between intelligibility and rating in familiarity to general international accents of

English before. Thus, any discussion points raised are discussed in terms of Jenkins (2007), the theoretical framework employed in the research.

5.4.2 Familiarity in International Accents of English

The following discusses the issue of ratings in familiarity to international accents of English, whether it can be used as an indicator for intelligibility or not, and also includs Jenkins (2007) attitudes measurement.

For the purpose of this research familiarity was conceptualised as familiarity to international English accents in general, not to the particular English accent as Thai English being experimented. The participants were instructed at the beginning of the research to rate their familiarity to international accents of English based on their experiences in international interaction and communication with English speakers from various L1 backgrounds. To the researcher's knowledge, rating in familiarity to international accents of English had not been examined to date for its link to intelligibility, with the predominant focus in the field investigating familiarity to the particular accent being measured. Though Jenkins (2007) examines attitudes towards an accent by including familiarity towards that accent as well, she focuses on familiarity in the sense of how comfortable the respondents were in making comments about the accent even with little familiarity. In addition, in this research, the decision to include this item was based on the personal observations of the researcher as a NNS of English and an academic in EIL, that often in communication in the EIL context, people claim they can understand different foreign accents well because they are familiar with international talk. Within the EIL framework, this issue was considered valid for research to investigate the veracity of such claims. The results from Jenkins' (2007) demonstrated that the way the respondents rated their familiarity contrasted with the comments they made. That is; for example, in Brazilian English, although the respondents were from a different L1 background and rated low familiarity level, still comfortably provided comments and criticisms of the accent. The current study explored the link between actual intelligibility as measured from

transcriptions and the rating in familiarity to international accents of English in general and there was found to be no significant relationship between the variables (r_s = -.04, *p* = .65). This suggests that when a person rates or claims that he or she is highly familiar with international accents of English or international communication it does not imply that they have a better comprehension of a particular foreign accent (Thai-English). Therefore, rating in the familiarity of international accents of English cannot be used as a predictor of listeners' intelligibility towards foreign accents; the two variables develop independently from one another. However, it is important to note the claim of accent familiarity is often viewed as too vague. That is, the issue of concern here is not to contest the link between familiarity to the language or accent and intelligibility, as this is no longer considered necessary to debate due to frequent support in the literature that familiarity in accent among shared L1 interlocutors facilitates intelligibility. For example, Gass and Varonis (1984) and Wingstedt and Schulman (1984) indicated that familiarity with a particular accent facilitates comprehension.

What is being raised here however, are the complexities surrounding familiarity to general international accents of English in relation to the intelligibility of one particular accent and the use of rating methods for informing of the personal experiences of an individual. When measuring familiarity by rating methods, a more precise frame needs to be provided; for example, the length of exposure to that particular accent. This is not restricted to familiarity only but also the other personal items that the respondents were required to rate in the experiment. The data demonstrated that the general and subjective personal rating in the issue of familiarity to international accents of English was not indicative of a concrete relationship with the tested factor (Thai-English intelligibility). It is believed that if the question was framed as "Familiarity to Thai accent of English", the results could be more reliable. Hence, more research in this issue is required.

5.4.3 Perceived Intelligibility

Perceived intelligibility was primarily measured in comparison with actual

intelligibility as perceived comprehensibility as in Munro and Derwing (1995a), Kim (2008), and Beinhoff (2014). Regardless of its conceptualisation, the operational definition for this study related to how difficult or easy it was to acoustically comprehend the speech being tested. Jenkins (2007) excluded intelligibility from attitude ratings in her work on the premise that the intelligibility of a person towards the accent may arise from the particular context instead of the overall use of accent. It is less general than the other items to be rated, such as correctness and pleasantness. Thus, it is not reliable to judge intelligibility as a whole based on questionnaire ratings. As such, the current research adopted both subjective and objective measurements of intelligibility data. The data from both measurements was then crosschecked, compared and tested for the relationship as the predictor of one another. The results from the actual intelligibility scores from transcription tasks of participants (*n* = 45) and their rating in self-perceived intelligibility demonstrated a moderate positive correlation (r_s = .51, *p* < .001). The link revealed between the two variables was considered significant, thus it is possible to link perceived intelligibility as a predictor for actual intelligibility, echoing the works of Munro and Derwing (1995a). However, research investigating the relationship between actual intelligibility and perceived intelligibility is low in volume, and among the few, the results are inconclusive. Kim (2008) indicated that there was no statistically significant correlation between perceived intelligibility and actual intelligibility, whereas Beinhoff (2014) found the opposite. She found that the participants who rated lower levels of perceived intelligibility from questionnaire ratings had fewer errors in transcription or fewer problems with their actual intelligibility which revealed a discrepancy between perceived intelligibility and actual intelligibility – "Despite their harsher comprehensibility rating, they made fewer incorrect transcriptions" (p.66). Statistically speaking, her work demonstrated a negative correlation between perceived intelligibility and actual intelligibility.

In any case, the results obtained from both the current study or that from Beinhoff

(2014) illustrate either positive or negative correlations between the two factors. This differs from the ratings in familiarity to international accents mentioned above, where no significant correlation was found. Therefore, it can be claimed that subjective ratings in perceived intelligibility can be a predictor of actual intelligibility as acquired through objective tasks such as dictation, cloze test, or transcription tasks as used in this study. Hence, it is considered reliable if the data of perceived intelligibility level is measured through subjective ratings or questionnaire. Moreover, among the three items selected to be examined as possible predictors of intelligibility in this work, perceived intelligibility was found the most significant. It must be noted, as mentioned by Jenkins (2007), that the genre and other test qualifications of the accents to be tested must be the same between the data collected from the subjective and objective tests.

5.5 Closing Remarks

The results of the current research demonstrate that the perception of foreign accented speech varies greatly based on the listeners L1. To provide a conclusive explanation regarding the interacting factors affecting intelligibility of Thai-accented speech, this chapter laid out the hierarchical assumptions and then expanded the investigation in the form of phonological representations. A possible explanation of the results from the transcription task was that the participants' English was strongly influenced by the structure of their L1. Put into a more practical perspective, the Thai EIL phonological core established reflects how these features were acoustically negotiated and perceived in EIL intelligibility. Thai-accented English features that the participants acoustically perceived and pictured in their minds illustrated the complex issues of shared and non-shared L1 effects on intelligibility, and subordination of English nativeness among NSs.

CHAPTER 6

CONCLUSION

After the previous chapters' discussion of the various explanatory factors, this final chapter will summarise the major insights of the study by taking a more practical orientation, revisit the core parts of each chapter, and conclude by evaluating the highlights of the study. The chapter commences with a brief overview of the core parts of the research; namely, the background of the study and the main literature, the methodology and key findings. Following the overview, the chapter continues with the highlights of the discussion, the significance of the findings, implications and contributions, limitations and achievements of the study and makes suggestions for further research. While the ramifications discussed are centred on Thai-accented English, the possible implications of the study for teaching pronunciation in other varieties of English can also be considered.

6.1 Research Summary

6.1.2 Background of the Study and Main Literature

This empirical study was an attempt to measure the intelligibility level of Thai-accented English pronunciation to different groups of English listeners based on their L1 in relation to the concept of English as an International Language (EIL). EIL suggests the promotion and recognition of endonormative varieties of English, a shift in paradigm from the previously held notions of the superiority of native-like English for communication in plurilingual settings and the concept of English native fallacy in ELT. Towards this end, the investigation of Thai-accented English intelligibility in EIL has better illuminated how different L1 groups of international listeners perceived English sound features as pronounced by Thai speakers with different level of accentedness. This study has also yielded vital and nuanced understandings and theoretical insights regarding problematic phonological features as threats to intelligibility, and other possible aspects of sociolinguistic factors related to intelligibility. Three salient features raised in the

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literature review, used as rationale in the formulation of the research questions of the study, are discussed below.

First, regarding to the concept of EIL, the global spread of English has led to the highly controversial issue regarding standard vs non-standard English or native vs non-native English for language description, language teaching and perceptions of the relative professional standing and competence of these two groups (Seidlhofer, 2003). Kirkpatrick (2010) considered that the root of such controversies emanates from the conviction that native speakers are better at speaking English than non-native speakers, and thus are better suited to teaching English than non-native English speakers.

The most concise examples of the differences in scholars' views toward this issue can be seen from that of Hughes *et al*. (2013) vs Jenkins (2000). Hughes *et al*. (2013) state that the most prestigious British dialect is Standard English and the most prestigious accent is RP; thus, should be the main goal for English learners. On the contrary, Jenkins (2000) claims that if the ultimate goal of English learning is to achieve communicative competence in international settings and if native speakers of English wish to participate in international communication in the 21st century, the main goal of English learning should be the ability to use and understand the different varieties of English. This is the current discordance in debated issues in EIL. The field of EIL research has shown developments in scope over the past 30 years, with up-to-date researched topics frequently found to relate to issues such as pedagogical goals; English teachers (NSs vs NNSs) and assessment; attitudes and identity; and competency and intelligibility. Research has attempted to ascertain the extent to which EIL learners should be allowed to use endonormative styles of English, according to their linguistic norms and cultural influences, to allow for successful communication within an EIL setting. However, in linguistics, human language comprises of several sub-elements as proposition, phonology, syntax, semantics, and pragmatics. Regarding the linguistic factors greatly affecting international intelligibility, EIL authorities e.g. McKay (2002), Jenkins (2000, 2009), and Kirkpatrick (2010) are in

consensus that the differences in pronunciation or phonology are the most salient features affecting mutual intelligibility among international users as it is considered the most fundamental communicative unit exposed when communicating. Scholars supporting the use of Standard English including syntax, lexis, and pragmatics such as Trudgill (1992) and Pennycook (1994), are still very careful and tentatively claim that the Standard of native English pronunciation should also be included in the English pedagogy and usage model. Thus far, intelligibility in pronunciation or phonological intelligibility of L1 accented English is considered the prominent problem in EIL.

Secondly, there are many research articles and studies investigating major English varieties and accents in the world such as Singaporean English, African English, Japanese English, etc. in relation to the EIL settings. However, there is a considerable lack of research regarding the acoustic features of Thai-accented English in relation to EIL intelligibility, as it is not one of the major ESL accents in the world. Jenkins (2000) established the Lingua Franca Core (LFC) by exploring English pronunciation of the Expanding Circle in compliment to previous research which largely explored major English accents, but Thai English data was not part of the core. More specifically, the position of English in Thailand is neither the first nor second language and is predominantly used to communicate with people from a different L1 only. In addition, Thailand's status as a non-colonised country results in a lower level of English usage than other neighbouring countries such as Malaysia, Myanmar, and the Philippines. As such, Thai people have much fewer chances to use English domestically and is simply viewed as the language of others. Yet, with continued globalisation and a reliance on English in the realms of business, science and technology, the importance of English is ever increasing and thus Thailand must accommodate. Additionally, English is also considered to represent modernisation and civilisation especially through the lenses of Thai people. Masavisut *et al*. (1986) further noted that brands of products in Thailand tend to use English on packaging and in advertisements because it gives products credibility and

implies a superior standard while Thai words sound corny and awkward (p.203-204). Furthermore, Watkhaolarm (2005) predicted that English would be increasingly nativised due to the role of English in Thai people's professional lives and consequently, Thais will make their own unique contribution to the English language alongside other major Englishes in Asia. However, the typological distance in phonology between the two languages, as well as the influence of the Thai spelling system, will likely drive the use of English by Thai's to be considerably deviated from its original native production. This leads to the background concept of Jenkins' (2000) LFC that with the development of multiple English varieties around the world today, there should be a minimum standard of proficiency set or the establishment of a (pronunciation) core to prevent English usage becoming too far deviated from its origin and to safeguard intelligibility among international users. The establishment of a core should not impede the development or desire of the learners to practice English usage near native-like proficiency if they wish to. Taking the theoretical framework of LFC and EIL, this empirical research was conducted as a first-hand investigation of Thai-accented English intelligibility to different L1 groups of English listeners. In addition, the phonological analysis from the authentic speech samples and instruments employed in this research allowed for examination of unintelligible and problematic sound features of Thai-accented English pronunciation.

Third, intelligibility study is considered a prominent issue in EIL and research has been found to employ both subjective and objective tests. To date, there is no agreement of the best tools for measuring intelligibility. The subjective tests used in the research reviewed consisted of interviews and questionnaire ratings, while others employed objective tests such as cloze test, dictation, and transcription tasks. The current research aimed to consolidate the opposing measures in relation to measuring intelligibility of Thai-accented speech via both objective and subjective measures. That is, an analysis of listeners' intelligibility towards authentic spontaneous connected speech of Thai-accented English with the elicitation of problematic sound features can add a new layer of

knowledge and understanding about Thai-accented English intelligibility. The use of transcription tasks utilising both orthographic and pseudo transcription enable a better understanding of how the listeners perceived the sound features uttered. Additionally, the use of subjective tests, rating questionnaires, which elicit subjective information regarding perceived intelligibility and attitudes provide an understanding of how participants viewed Thai-accented English in terms of its sound recognition. The results obtained from the objective test as transcription task can reveal the trustworthiness of the intelligibility data gained from the subjective test as rating method as well. It is noteworthy to highlight that this study focused on what listeners perceived in Thai-accented English, not what they said they did regarding intelligibility. Subjective methods were used for comparative analysis with objective data to ascertain how reliable ratings were in regard to intelligibility.

According to the rationale of the study and the identified gap in the literature as summarised, the research was then led to examine intelligibility of Thai-accented English to different L1 groups of listeners through the following research methodology.

6.1.3 Methodology

In brief, the current study investigated the association of different levels of Thai-accented English to different groups of English participants; English NSs, NNSs who do not have Thai L1, and Thais. It also identifies the phonological features of Thai-accented English that are predicted threats to intelligibility and the association of other possible indicators such as attitudes, familiarity to international accents of English, and perceived intelligibility. A quasi-experiment with a counterbalanced design was conducted with 45 participants (15 English NSs, 15 English NNSs – non-Thai, and 15 Thais). Each participant took part in all three conditions which involved listening to and transcribing three spontaneous speech samples of Thai-accented English which varied through level of accent. The level of accentedness was judged as weak, moderate, and strong by both linguistic experts and non-linguistic experts (native speakers of English). The transcription was divided into two forms: orthographic transcription, to be used when the participants

were sure in their recognition of the utterances and pseudo transcription, for use when participants were unsure of the utterances and were required to spell the sounds as perceived. Only content words were considered for use in analysis and all function morphemes were excluded. Moreover, segmental features were the focus of the research, not prosodic features. The intelligibility scores were calculated based on the accurately transcribed words in each speech sample. A Two-Way ANOVA analysed the association of intelligibility scores of each group of listeners to each level of accent. Errors in transcription were phonetically analysed with the comparison between the actual pronunciation in the sounds and the reference standard pronunciation (Carnegie Mellon Pronunciation Dictionary and Longman Pronunciation Dictionary) to establish the problematic non-standard pronunciation features that failed to be intelligible. Additionally, the research investigated other possible indicators for Thai English intelligibility such as attitudes, familiarity to international accents of English, and perceived intelligibility as measured through questionnaire ratings (6-Likert Scale). The data from the ratings method were cross-checked with actual intelligibility scores to ascertain if there were any association between the two factors. The findings of the research are briefly described in next section.

6.1.4 Key Findings

6.1.4.1 Research question no. 1. To what extent is the level of Thai accentedness (weak, moderate, and strong) in spontaneous English speech associated with intelligibility level of the groups of listeners as measured by the accuracy of their transcription of the speech stimuli?

Although the descriptive statistics for the overall intelligibility of Thai English pronunciation indicated that Thai English can be considered intelligible to global listeners (scores are higher than 60%), the inferential statistics demonstrated that Thai participants displayed the highest level of intelligibility, followed by English NSs and NNSs. Regarding English NSs intelligibility of Thai English pronunciation, intelligibility was

highest when the accent was moderate, followed by weak then strong. However, the differences in the scores of moderate and weak accents were not statistically significant. Concerning intelligibility of English NNSs who were not Thai, the pattern of scores was significant in all levels of accent. That is, comprehension of speech was best when the accent was weakest, followed by moderate then strong, respectively. For Thai participants, the pattern was contrary to that shown by NSs in that they found the Thai accent easiest to understand when it was strongest, followed by the weak accent, and moderate accent respectively. Similar to NSs, the differences in the scores between weak accent and moderate accent intelligibility were not statistically significant. This mirrors the statement that different L1 interlocutors perceived foreign accent differently.

6.1.4.2 Research question no. 2. Which specific pronunciation features of Thai English tend to be problematic features in intelligibility for these groups of English listeners, as measured by the errors in their transcription of the tested speech?

Of the entire of 157 content words, there were 16 words that were identified as unintelligible for the listeners (eight words from more than half of the overall listeners and eight words from more than half of each group of listeners). The problematic Thai non-standard English pronunciation segmental features leading to intelligibility failure can be classified as consonants, vowels, and syllable structure. Regarding problematic consonantal sounds, it was discovered that the intelligibility threats were related to cluster: dropping final release in final cluster such as [t] in manageme<u>nt</u>, insertion and deletion of sound in an initial cluster such as [dr] as [dʷr] in <u>dr</u>essing and [bl] as [l] in proba<u>bl</u>y respectively, substitution of sounds in the final position of the syllable such as [l] was substituted as [w] in environmen<u>tal</u>, and voiced sounds are pronounced as voiceless such as [z] was substituted as [s] in de<u>s</u>ign and [ʒ] was substituted as [ʃ] in <u>g</u>enre.

Considering vowels, the problematic features were to fully stress unstressed vowels (schwa) such as [mənt] as [men] in manage<u>ment</u>, vowels position heightening such as [æ] as [e] in <u>ma</u>nagement, and monophthongization such as [juː] as [i] in ar<u>gue</u>.

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As for the syllable structure, it was found that in the pronunciation of Thai speakers the reduction/omission of an unstressed syllable such as [rə] in gen<u>re</u> and [bə] in pro<u>ba</u>bly led to intelligibility failure as well. The current study promotes the incorporation of these sound features in the Thai EIL pronunciation core.

6.1.4.3 Research question no. 3. To what extent are listeners' attitudes, familiarity in the international accents of English, and perceived intelligibility, as measured by questionnaire ratings using a 6-point Likert scale, associated with actual intelligibility performance?

The research measured three possible indicators for their association with intelligibility using a subjective rating method; a) attitudes, b) familiarity to international accents of English and 3) perceived intelligibility. The holistic rating of attitudes towards the pronunciation in each level of accent used in this study comprised of five impressionistic elements; acceptability, correctness, friendliness, pleasantness, and intelligence. With the use of Spearman's Rho correlational analysis, the attitudes in relation to participants' actual intelligibility level of Thai English pronunciation demonstrated a positive but weak relationship between the two variables which signified the intelligibility of an individual was correlated to their attitudes towards the accent, however, the relationship found was weak (r_s = .27, p < .001). Next, the link between actual intelligibility, measured through transcription and ratings in familiarity, to international accents of English in general was investigated and found no significant relationship (r_s = -.04, p = .65). Finally, the results from the correlative analysis of actual intelligibility scores and ratings in self-perceived intelligibility indicated a moderate positive correlation (r_s = .50, p < .001). In sum, among the three factors, perceived intelligibility demonstrated the strongest association with intelligibility performance.

With the results obtained from the analysis as raised, the findings described are discussed in the Conclusion section below.

6.2 Conclusion

This empirical study was to explore the association of Thai-accented English to different groups of L1 listeners and attempt to establish a Thai EIL phonology core, as well as to investigate the reliability of intelligibility measurement through the possible predictors using subjective methods. The rationale behind this inquiry was to address current theoretical and controversial issues related to the notion of WE and EIL, and to contribute to the underexplored field of Thai-accented English in the literature. Toward this end, the investigation of Thai-accented English has not only better illuminated how Thai-accented English was perceived by international users of English; this query has also yielded vital and nuanced understandings and theoretical insights about foreign accentedness and intelligibility where L1 of listeners is the dominant factor. In addition, this study expanded on phonological components as threats to intelligibility and other aspects of sociolinguistic factors and practices related to English in Thailand. Further, these acoustic reflections on Thai-accented English have described power relationships in which intelligibility was enmeshed. Six major points that emerged from the foregoing discussion are worth highlighting.

First, the findings confirmed that a shared L1 has a significant advantageous effect, supporting the findings of Bent and Bradlow (2003), as Thai participants statistically performed best in Thai accented English across the overall L1 groups of listeners and the results were statistically significant. In addition, the performance of Thai listeners was the best when Thai accent was the strongest. Though there are some works i.e. Munro *et al*. (2006) and Harding (2011), claiming that such benefits are not significant and are infrequently observed, this research strongly confirmed the significance of shared L1 benefits on accented speech intelligibility.

Second, the large size of English native speakers' mental lexicon was considered related to the positive effects on phonological intelligibility as indicated by their highest intelligibility scores in the moderate accent condition, which contained more technical

items than the other two speech samples. Also, the top-down processing skill possessed by native speakers of the language, facilitated the increased performance by NSs listeners in this study. They were found to be more certain when predicting sounds and were able to access the related mental lexicon more effectively. However, the positive effect of nativeness in perceiving L2 accented speech is not as significant as the effect of shared L1 benefits.

Third, English NNSs participants who were not Thai demonstrated the lowest levels of intelligibility. The results of current research are in accordance with findings from previous studies; when listening to foreign speech, NNSs have a narrower band of allophonic tolerance, which impedes comprehension when dealing with unfamiliar sounds (Jenkins, 2000). As indicated in the results, NNSs intelligibility was better through the weaker level of accent to a statistically significant level. This suggests that when encountering a language that is not L1 and not L1 accented, native-like pronunciation or the reduction of accent is a better facilitator for intelligibility.

Fourth, the results adhere and resonate with the notion that the perception of sounds by different L1 listeners is not identical (Best & Tylor, 2007; Munro *et al*., 2006). Such discrepancies in sound perception must lead to an awareness of the speakers to adjust their pronunciation for the listeners appropriately. For shared L1 listeners, L1 accented pronunciation can be more permissible, while for NNSs the pronunciation must be monitored to exhibit a minimum level of L1 accent; the articulation of L1 phonological features needs to be reduced as much as possible. The more native-like or weaker accent, the easier it is for NNSs and NSs to comprehend speech. When considering the effects of accentedness on NSs intelligibility, focus must be drawn to the implicit advantages of mother tongue. With a larger mental lexicon and the use of top-down processing in facilitating sound perception, the effects of accentedness was less detrimental to intelligibility than for NNSs who were not Thai. Even so, NSs still found the strongest accent condition most difficult to comprehend, indicating that L1 accent should be reduced

as possible to aid intelligibility. To reiterate, the current study suggests that in EIL communication, the level of accentedness must be controlled as appropriate to the different L1 listeners: listener-dominated orientation.

Fifth, with regard to the Thai EIL pronunciation core, the general characteristics of Thai English pronunciation found to cause intelligibility failure were the typical phonological patterns produced by most languages in East Asian countries such as Singapore, Vietnam, and Malaysia; lack of final released consonant, syllabic timed pronunciation, among others. These problematic features should be included in the EIL pronunciation core and used as the assessment reference and guidelines in teaching EIL pronunciation to safeguard international intelligibility. The unintelligible sound features of Thai-accented English pronunciation identified in this study are neither fully in line with those in the LFC of Jenkins (2000) nor those in Kirkpatrick (2010). Only one problematic sound feature was found in accordance with both Jenkins (2000) and Kirkpatrick (2010); cluster simplification. Other identified features such as monophthongization and lack of reduced vowels are mentioned in Kirkpatrick (2010) but are not included in LFC. Additional unintelligible sound features of Thai-accented English detected in this study but not mentioned as intelligibility threats in those two works were voicing, unstressed syllable omission, vowel quality and omission/reduction of unstressed syllable. Given the incongruent methodologies and samples used among the three studies, it is not surprising that there is disparity regarding the problematic sound features identified. While the current research specifically investigated Thai-accented English, the results can be applied to other languages that share similar phonological features; most of the ASEAN countries.

Sixth, with the exception of perceived intelligibility, the findings gained from rating methods as attitudes and familiarity to international accents of English were demonstrated as insignificant predictors of intelligibility and thus the two factors occur independently. The use of subjective methods for measuring intelligibility is debated and their reliability is contentious. To be effective in their application the questions posed

must be meticulously developed to ensure there is no ambiguity towards participants whilst also guarding against response bias. As a result, subjective tests alone are considered less reliable than objective measures. Due to a disparity in results, predictions could not be made regarding positive or negative attitudes towards an accent based on intelligibility. Furthermore, it is worth note that to test intelligibility in any particular accent, the measurement of familiarity to that particular accent instead of general foreign accent is required. Nevertheless, when intelligibility is to be measured, no other elements such as unintelligible sound features and attitudes, ratings of perceived intelligibility can be relied on, as indicated in the current research. The level of accurate transcription in the objective test was congruent with participant ratings of perceived intelligibility.

6.3 Significance and Implications of the Research Findings

This current study has attempted to extend the knowledge of Thai-accented English in relation to EIL intelligibility. As shown in Chapter 2, the body of literature regarding Thai English is relatively small; especially in relation to EIL and global communication. In effect, the issue of its pronunciation thus far is undertheorized. To date, there are only a few empirical studies based on linguistic orientation. The empirical research conducted in this project serves as a firsthand examination of the intelligibility of Thai-accented English in EIL through the perception of English language users from different L1 backgrounds. This allowed for a reflection of an authentic simulation of Thai-accentedness in an international communication setting. Drawing upon the listeners' perception of Thai-accented English through a rigorous transcription method, the critical applied linguistics approach employed in this research allowed the research to take a closer look at Thai-accented English. This study has ramifications and has raised concerns for EIL studies and applied linguistic research on three levels.

6.3.1 Research Level

This research has contributed to a body of research methodology knowledge of EIL intelligibility by providing empirical evidence and offering a critical and innovative

methodology for intelligibility research. The association of level of foreign accentedness in English pronunciation and perception of English listeners from different L1, and the establishment of a phonological core, was measured and obtained through the real acoustic perception of the listeners. This was achieved via the use of a transcription task in which both orthographic and pseudo transcription were employed with the additional implementation of a respelling pronunciation system. This functioned to elicit the phonological perception from participants who lacked phonetic skills; thus, was more reliable regarding speech sound perception from general users of English. The results obtained are the actual reflection of the problematic features through the lenses of the listeners rather than the interpretation and observation of the researcher. Also, the reliability of the intelligibility measurement through the subjective method has been crosschecked with the objective methods. This is deemed beneficial for future research in the appropriate selection of an instrument for measuring intelligibility. Additionally, the selection of the participants was solely based on the interaction with English whether or not it was the mother tongue. In doing so the complete group of English interactors in EIL was included in the experiment rather than the focus on NSs or NNSs or shared L1 listeners.

6.3.2 Theoretical Level

This empirical study probed into the theoretical understanding of issues in foreign-accented English in EIL. It demonstrated that stronger foreign-accented English poses more problems for listeners who are English NNSs with non-shared L1. Consequently, from these results, the reduction in level of accent is believed to be the facilitator in EIL communication. Also, this research has revealed critical evidence in relation to international intelligibility; though nativeness of English ability in NSs was found advantageous and helped facilitate intelligibility, its effect on intelligibility was less prominent than shared L1 benefits. That is between English NSs and shared L1 listeners when encountering L2 accented speech, English NSs can deal with the phonological

intelligibility of the speech less effectively than shared L1 listeners to a significant level, especially when encountering a stronger degree of accent. On the contrary, the positive effect of English native speakership is more significant than shared-L1 listeners only when the speech contains higher degree of uncommon and technical terms. To date the effect of shared L1 on intelligibility and native speakers' innate ability have been explored separately in the literature. Though there is consensus throughout the research that both facilitate intelligibility, there has yet to be a comparative analysis regarding their degree of effect.

In addition, this is the first critical investigation of Thai-accented English. This study has taken a small yet critical step in the direction of exploring a particularised English and global identity in an EIL context in a South-East Asian region. Needless to say, this inquiry of Thai English offers an interesting invitation to delve into this line of research. For a better understanding of World English studies in Thailand, more research is needed in this important strand.

6.3.4 Pedagogical level

Pedagogical implication and contribution are perhaps the ultimate goal of this study. Several pedagogical significances of the research must be stressed here. Firstly, it is for the first time that a Thai EIL phonological core has been established. It serves as the reference point for English teachers in Thailand to appraise the teaching and assessment of the learners in relation to their international communicative competency rather than native speakers' competency. This finding suggests significant adjustments or changes are needed in terms of theories and practices related to learning and teaching English in Thailand. Moreover, the level of accentedness on the intelligibility of listeners from different L1 has been reported in this study. The results can be applied by EIL educators in designing a curriculum and teaching pronunciation materials to cater to the learners as appropriate for the group of potential L1 listeners they are going to encounter in their career. Per the unintelligible sound features obtained, a decrement in intelligibility was

related to the differences between the sound systems. Solving these problems is beyond the scope of this research as teaching material, methods, and assessment would all need to be reimagined. However, it is clear that all Thai English pronunciation should be eliminated for achieving international intelligibility or at least keep as minimum. This claim from the study is not intended to compete or argue over the concept of L1 identity; that L1 accent must be preserved in order to reflect the identity of the speaker and every English speaker is legitimate to express their accent through their Englishes usage (Jenkins, 2007). However, the line should be drawn between identity and intelligibility. According to the intelligibility purposes, the results obtained from the experiment were proven that the stronger accent in English pronunciation negatively affected international intelligibility. Therefore, to attain L1 identity and to achieve international intelligibility might be viewed as two separate issues.

Concerning the issue of pedagogy in English language teaching, it can be stated that up to now English language teaching and learning in Thailand has not adequately prepared Thais for the changing world. Presently, there has still not been a significant increase in students' ability to communicate in English, converse to that expected. It can be said that in many English classes, the communicative approach has not truly been integrated. Most teachers still rely on the use of grammar and vocabulary-based teaching and students are taught for the target of test achievement only. Furthermore, in some cases, teachers do not really understand the approach and how to utilise it in a classroom context. A major impediment to progression is the adherence to EFL in every aspect including the attainment of native-like English pronunciation.

Secondly, it is advised by this study that phonetic study should be mandatory for every English learner in the country regardless of their major of study. In addition, it should be applied in the early stages of English learning so that the interference of orthography or spelling confusion can be eliminated. Consequently, the learners will attach less to the form of the spelling and rely more on how the individual sound is

pronounced in a word. At present, more English programmes are required for young learners to study English with the phonic system in Thailand, where the children learn to recognise that the alphabets' names and sounds are different from each other, and when pronouncing each individual word, it is the sound that is important and not the form. It is hoped that an awareness in phonetics will gain more attention in English pronunciation teaching in Thailand and with the emphasis on problematic sound features for international intelligibility, English speech as produced by Thai speakers can be improved.

Thirdly, the results of the study also clearly demonstrate that intelligibility towards an accent is not identical through listeners with a different L1 background. Interlocutors need to be aware of this fact and adjust their own speech as appropriate to listeners' phonological perception (convergence) to achieve the highest level of intelligibility. As a result, it is proposed that in EIL pedagogy instead of one single pronunciation model, learners should learn the features of a variety of accents. For example, endonormative pronunciation should be accepted as another way of appropriate English in their own local context for communication purposes. While, in communication with people from different L1, an exonormative standard should be guided to maintain or safeguard international intelligibility; that is the reduction non-standard features of English. There must be an acceptance of endonormative pronunciation and use of English in EIL. In fact, it needs to be used as the reference of pronunciation to prevent non-native pronunciation that deviates excessively from native pronunciation. In addition, any EIL phonological core for any variety set should be used as the minimum standard for pronunciation only, and should not prevent the learners in developing their pronunciation as close to native speakers if they wish. Moreover, the results imply that vocabulary size is another advantage for phonological intelligibility success, EIL pedagogy should combine vocabulary training in the curriculum as well to enhance the ability of learners in perceiving the utterances, to provide an alternative to the overreliance on acoustic signals and familiarity to the accent only – application of top-down process should be encouraged.

Last but certainly not least, as a thorough review of the literature, this study proposes that the LFC and other possible phonological core sets as the facilitator of international communication should be used as an assessment reference; rather than teaching model, in order to negate the possible weakness in using the core. It might be true that reaching native like competency seems impossible and creates nothing but a burden on the learners, but as the teachers, we cannot prevent our learners directly or indirectly developing their ability beyond the minimum standard as the rationale of the core. As a result, within a classroom teaching context, the standard or native pattern of pronunciation is encouraged so that the learners know this is the real or original pronunciation of the word by its native speakers. In contrast, during an assessment, the established core should be the blue print rather over native-like pronunciation. That is, if there are some errors from the learners that are included in the core, those features are supposed to be more strictly assessed rather than the non-core features. On the contrary, if the learners exhibit errors which are non-core features, these errors, whilst requiring correction, should not be considered a failure as they have been demonstrated as having no salient effect on intelligibility.

6.4 Limitations of the Study

Every effort was made to ensure the originality and quality of the current study was maintained throughout. However, consideration must be given to the identified limitations, points of critical analysis, and the opening of a dialogue regarding improvements for future research. All crucial points of concern in the research will be drawn through each theme explored as follows.

6.4.1 The Association of Different Levels of Foreign Accents to Different Groups of Listeners

The term intelligibility has had numerous conceptualisations as detailed in Chapter 2. Broadly speaking, it is the extent to which the message is understood by the listener. In this study, Thai English pronunciation was specifically investigated for its

phonological intelligibility. That is, how the pronunciation of English by Thai speakers can be perceived by different groups of listeners. Therefore, in this context, how the utterances were comprehended (comprehensibility) and interpreted (interpretability) through semantic and pragmatic functions were not the focus of the study. Only acoustic features of the pronunciation (phonologically intelligibility) were addressed. The moderate accent speech sample in this study contains higher instances of the use of technical terms which indicates a lapse in control while recording. Every effort was made to ensure that every speech sample was recorded under the same interview frame "Talk about your research". However, differences in the content of each speech samples, along with levels of accent, caused further inferencing factors affecting intelligibility. Had the speech sample for moderate accent contained the same level of technical terms as the weak and strong accents, it is anticipated that the only factor found affecting the level of intelligibility among listeners would be shared L1 or accent familiarity. However, due to the increased use of technical terms it could be speculated that NSs had an advantage through larger mental lexicon.

6.4.2 Problematic Sound Features of Thai English Pronunciation to Different Groups of Listeners

Intelligibility is not easy to define and measure, resulting in difficulties in establishing particular features that fail to be understood by the range of listeners. First, as mentioned throughout the research, the results of the current study must be considered in relation to the focus of investigation; the phonological intelligibility of Thai-accented English pronunciation to international English listeners with an emphasis on **segmental features** only. The motivation for examining intelligibility through segmental features only was detailed by Jenkins (2000) who posits that suprasegmentals are beyond the scope of teachability and learnability as they require considerable exposure to the language to acquire. Moreover, to collect data relating to prosodic features, the participants would have to be well-trained phoneticians or possess solid knowledge of phonology rather than

the general English listeners employed in this research. The current research aimed to collect the data from an as authentic situation of users of English in the international context as possible. Hence, general users of English were selected as the sample groups, and the possible features of problematic sounds were segmentals only.

Besides the failure of Thai speakers to pronounce segmentals accurately, as described and analysed in this study, observation of the speech samples indicated that suprasegmental pronunciation was problematic as well. The current research could identify many instances where segmentals lead to intelligibility failure, however the results may not remain the same if the focus of the study incorporated prosody. The failure in intelligibility demonstrated here may be partially influenced by non-standard pronunciation in suprasegmentals such as intonation and stress as well. This highlights an area of further study - the exploration of intelligibility of Thai English pronunciation with a focus on suprasegmentals. In addition, to the best of the researcher's knowledge, while there are sporadic reports of the comparative study of Thai and English phonology, there was no systematic attempt to establish a core for Thai EIL pronunciation. This work is still in its infancy and more research is needed before conclusive comparisons can be drawn. Future research using larger samples with increased L1s would serve to reinforce the findings.

6.4.3 The Association of other Possible Intelligibility Indicators to the Actual Intelligibility as Measured by Rating Methods

In the process of attitudes or human senses testing towards any particular speech, the main principle is that the test takers must not be aware that it is not the speech that is being tested, but the speakers' traits such as intelligence, friendliness, personality, etc. Therefore, all speech samples provided in test must be controlled for length, difficulty, gender of the speaker, etc. and there must only be one variable that is different in the speech stimuli tested such as level of accent, gender of the speaker, etc., depending on what is to be tested in the research (Lambert *et al.*, 1960). While every effort was made ensure the speech samples were controlled for factors such as length of speech, topic, level

of difficulty, and noise elimination, there were additional variances besides the significant of level of foreign accents as judged. These variances included gender of the speakers, complexity of lexis and speed of the utterances. Therefore, the results gained from attitudes (correctness, pleasantness, friendliness, acceptability, and intelligence) may not exactly reflect the perception of the different level of accents only, but also the voice of a different gender and the speed (fluency) of the utterances as well. However, as participants were firmly instructed to rate the items in the attitudes survey in accordance to the pronunciation they heard, it is anticipated that these factors may negligible. Therefore, it is advised that future studies collect speech samples with a different level of accent from speakers with the same characteristics such as gender and speed in utterances as much as possible.

6.5 Future Research Implications and Contributions

This current study has attempted to explore the association of accentedness and intelligibility in EIL setting as well as establish an EIL pronunciation core for Thai-accented English. As highlighted in Chapter 2, there is minimal research on the Thai English accent. Regarding studies into intelligibility of Thai-accented English in an international context, the issue is far undertheorized. Concerning intelligibility measurement in EIL itself, the most effective tool is yet to be agreed upon. Moreover, the problematic sound features identified in previous studies are considered a result of data collection methods. Previous research reviewed, lacked a systematic way of eliciting problematic sound features and relied on observations of communication breakdown and the subjective assumption of the researcher that the mispronunciation in some sounds led the intelligibility failure. To the researcher's best knowledge, none of the work, even Jenkins (2000)'s LFC investigated the perception of sounds as truly perceived by the listeners: which features in the words were failed to recognise and how listeners perceived these sounds. The empirical research conducted serves as a first-hand examination of phonological intelligibility and the problematic sound features of foreign-accented English

through the use of orthographic and pseudo transcription detailing the actual acoustic perception and description as revealed by the listeners. This research has contributed to an ever-expanding body of intelligibility investigation in EIL and World Englishes by providing empirical evidence and offering an innovative research methodology. This study has taken a small yet critical step in the direction of exploring intelligibility and problematic sound features in a particular foreign accent of language: Thai English accentedness.

This empirical study also probed into the theoretical understanding of the pronunciation core of EIL in Thailand. Needless to say, this inquiry surrounding a Thai EIL pronunciation core offers an interesting invitation to delve into this line of research as it is evident more research is required to develop the fundamentals to a more satisfactory level. For a more conclusive understanding, suprasegmentals should be investigated in relation to the phonological intelligibility of Thai English accent.

There are several important implications for research in intelligibility assessment measures through rating methods. First, it was shown that the intelligibility measuring methods through subjective tools as ratings can give inconsistent results. Actual intelligibility in relation to attitudes and perceived intelligibility were demonstrated to be dependent on different levels of strength, but independent to familiarity to international accents of English. Given discrepancies and the weak relationships found it should be noted that researchers should exercise caution when measuring intelligibility level of these possible indicators using a rating method. Second, familiarity to international accents of English as the indicator of intelligibility to particular foreign accent cannot be relied on. To test intelligibility of any particular accent, the familiarity to that specific accent has to be investigated, not general foreign accent or international talk. As stated in the literature, the greater phonological distance between the two varieties, the lower mutual intelligibility can occur (Grimes, 1989). Third, attitude towards an accent is considered very complex and many factors can be involved beyond linguistic elements, not only phonological

intelligibility but also social, political, nationality, etc. Also, listeners' factors such as tolerance to foreign accent, flexibility, tiredness or prejudice can also affect their attitudes towards the accent. Therefore, any conjecture regarding attitudes and their relation to intelligibility should be made tentatively at best. This study found a positive relationship between the two factors - that is the attitudes tended to be more positive when intelligibility was high. However, the correlation was relatively weak. In addition, the reports from the literature are still mixed and unresolved in this issue and thus more systematic research is still required. To reiterate, it is suggested that measuring intelligibility through subjective measures such as ratings is unreliable and recommendations are made for the implementation of objective measurements to obtain reliable results.

6.6 Closing Remarks

As the final statements of this research, the ultimate aim for conducting this study is once again emphasised - Thai EIL learners should be able to use English as their international language like users from other major ESL accents in the world. To achieve the goal of international communication, it is not only the pronunciation of the speakers that has to be the focus, but who the listeners are as well. The use of their English language can be flexible; adapted and adjusted as suitable to whom they are communicating with. They should be able to leave their English classes with a new concept of English language study; a language they can learn and appropriate without feeling enslaved by it. "English is not a master but an additional communicative tool to enhance their possibility of being someone equally important as others" (Buriphakdi, 2008, p. 234).

APPENDICES

Appendix A

Frequency of Keywords in Each Speech Sample

Rated in British National Corpus

Weak Accent		Moderate Accent		Strong Accent	
Political	1,423,704	Cross-dressing	78	Perception	88,049
Economy	871,777	Genre	70,035	Pollution	121,768
Poverty	234,095	Film	1,291,630	Environmental	345,231
Inequality	63,900	Western	517,476	Management	1,139,993
Insecurity	32,365	Classic	225,885	System	1,703,049
Nation	747,952	British	790,648	Stakeholder	15,380
Thailand	115,395	Cinematic	25,253	*Business	2,780,357
South East Asia	7,501	Lesbianism	945	Sector	870,017
		Homosexuality	24,757		

Note: Data Based on British National Corpus - 4.7 Billion Words: Retrived on June 2017
* The highest frequency word found in the list is "Business": 2,780, 357 = 0.05%

Content Predictability Test: Word-Filling Task and Results

Personal Information:

English Language User: Native Speaker/ Non-Native Speaker _____

English Proficiency Scores (NNSs only):_____

Highest Degree of Education:_____

Instruction:

Please fill in the blanks in the transcription of the speech with the words you think most appropriate (some grammatical errors are found in the texts as they are English L2 spontaneous speech production).

Basically, I'm gonna talking about if in the area of _____ _____ in Thailand.

And so far we probably got to focus about the _____ in Thailand and see about the

_____ of the low income people in Thailand. And, then trying to find that actually

the _____ and _____ actually are connected that people forgot to see about the

problem about the _____ about low income class people. And then probably I'm not

gonna talking about Thailand only. Thailand is gonna be the main case study in my project.

But definitely I'm gonna compare it with all the_____. And, probably it will be in

_____ _____ _____ as well. And I think I'm gonna pick um Korea as

example country because Korea is one of the top rank _____ in _____ Asia.

For my PhD research, I think I'm still gonna stick to the same subject about _____

_____. But I will work in further fields like other _____of films like it can

be_____, it can be _____, or like _____ _____ any other films

that deals with _____ _____ and I will look it in terms of the _____

affect and _____ tools how the directors is there anything like behind the view of

_____ _____rather than _____ or_____. I think there's gonna

be some other kind of factors about this kind of dealing with the _____

_____in terms of _____or _____or whatever.

Transcription of Speech No. 3

Back to the _____, it's lie on different area, they perceive different_____.

They have different _____about_____. The problem now I want to argue, the

problem now is normally _____ _____ _____, they design for

one fit all. For example in one area, the _____ _____usually implement one

_____ _____for all whole the area but it doesn't work. The _____

_____have to lie a specific there _____ _____ for each location

depend on the _____of_____.

Table B1

Content Predictability Test Results

Recordings	NSs (n = 5)	NNSs (n = 5)	Thais (n = 5)
Recording No. 1 Weak Accent	22%	16%	22%
Recording No. 2 Moderate Accent	10%	4%	4%
Recording No. 3 Strong Accent	1.5%	0%	3%

Appendix C

Sample of Voice Quality Rating

Please rate the quality of the following recordings:

(5 – very good, 4 - good, 3 - fair, 2 - poor, 1 - very poor)

Recording	Clarity	Loudness	*In overall, do you have any problems in listening to this recording? (Yes/No)*
1	4	4	No
2	4	4	No
3	4	4	No
4	4	4	No
5	4	4	No
6	4	4	No
7	4	4	No
8	4	4	No
9	4	4	No
10	4	4	No
11	4	4	No

Informants Consent Letter

Informed Consent Form

Dear Informant,

My name is Jirada Suntornsawet, and I am a PhD student in Department of Education, the University of York, UK.

You are invited to participate in my research study. The following information is provided in order to help you to make an informed decision whether or not to participate. If you have any questions please do not hesitate to ask.

You are eligible to participate in this project because you are Thai who uses English as a foreign language. The purpose of this study is to investigate **'At what level of Thai English is intelligible for different groups of English users'.**

Informant in this study will require approximately 15 minutes of your time. During this time you will be asked to have the informal interview explaining about your specialize areas such as your dissertation topic, your research methodology, your current studied projects, etc.

Your English production is very important. Therefore, I ask your permission to audio record the interview. The data will only be used by those involved in this study which includes intelligibility raters, linguistic experts, my advisor, and me.

Your participation in this study is voluntary. You are free to decide not to participate in this study or to withdraw at any time. If you choose to participate, you may withdraw at any time by notifying me. Upon your request to withdraw, all information pertaining to you will be destroyed. If you choose to participate, all information will be held in strict confidence. Your response will be considered only in combination with those from other participants. The information obtained in the study may be published in scientific journals or presented at scientific meetings; your identity however, will be kept strictly confidential. A pseudonym will be used in every process to protect your information and identity.

If you are willing to participate in this study, please sign the following statement.

Sincerely,

Miss Jirada Suntornsawet

Researcher

Voluntary Consent Form

Informant Part:

I hereby certify that I have read and understand the information on the form. The researcher has my consent to volunteer to be an informant in this. I understand that my responses are completely confidential and that I have the right to withdraw at any time. I have received a copy of this informed Consent Form to keep in my possession.

Name: _____

Phone number or location where you can be reached:

_____

_____

_____

Signature_____(Informant)

(_____)

Date_____

Researcher Part:

I hereby certify that I have explained to the above individual the nature and purpose, the potential benefits, and possible risks associated with participating in this research study, have answered any questions that have been raised, and have witnessed the above procedure.

Signature_____(Researcher)

(_____)

Date_____

Appendix E

Sample of Accent Rating by Non-Linguist Expert

Personal Information of Rater

Name (optional)   **David Perrodin**

Sex   ☑ Male   ☐ Female

Country of Origin   **United States of America**

First Language   **English**

Based on **Standard English Pronunciation**, please rate the degree of 'foreign accent' in the following recordings

Recordings	Degree of Foreign Accent		
	weak	moderate	strong
1			X
2		X	
3			X
4			X
5		X	
6			X
7		X	
8	X		
9		X	
10	X		
11		X	

Samples of Accent Rating by Linguistic Expert

Please listen to and rate level of foreign accent of the 11 recordings (1 minute for each record) and then list all pronunciation features that you find do not follow or conform any standard variety of English to support your rating.

No. of Recordings	Level of Accent			Main Segmental/Suprasegmental Features
	weak	Moderate	Strong	
Recording 1		✘		**segmental features:** 1) The phoneme /d/ in most of the words is replaced by the retroflex phoneme /ɖ/. For example the word rather is pronounced as,' /ra:ɖə/ 2) short vowel/ i/ is pronounced as long/i:/ 3) 'there is', in rapid speech is pronounced as,'dez. 4) Initial vowels are pronounced as longer by the speakers i.e. the word other is pronounced as /a:de:/. **super segmental features:** 1) final consonants are also aspirated in some words. 2) Over all stress seems to be like the English speakers.
Recording 2		✘		**segmental features:**1) syllables are ended in a vowel and final consonants are not pronounced in most words.ie., 'but' is pronounced as/ ba/ 2) The consonant /k/ is replaced by/ x/ in words by the speaker. For example, 'actually' /æktʃuli:/ is pronounced as /æxtuli:/ 3) Last syllables of the stressed syllables end in long vowels. i.e. poverty ends in a long / i:/in the word final position. **super segmental features:**1) consonants are aspirated 2) second syllable is stressed in most of the words.i.e people is pronounced as /pi:pʰul/, 3) intonation and pitch are balanced. The speech is mostly intelligible.
Recording 3	✘			**segmental features:** 1) final consonants not pronounced i.e the word test is pronounced as /te:s/ by the speaker. 2) The middle consonants of monosyllable words are also not pronounced by the speaker. The word, 'its' is pronounced as,'/is/ 3) certain vowels are pronounced more rounded which can confuse the listener for example the word, 'lone' , /lɒn/ is pronounced as,'/lɔn/ by the speaker.

				super segmental features: 1) In most of the words, stress is on the first syllables just like English speakers. 2) Consonants are aspirated as in English words. 3) Over all stress and rhythm is balanced and timely.
Recording 4			✖	**Segmental features** are: 1) medial vowel is not pronounced in tri-syllabic words i.e. /dɪdʒɪtəl/ is pronounced as /diːʒtəl/ 2) the short vowel/ i/ is pronounced as a long vowel i: for example: dɒɪŋ becomes doiːŋ, 3) final consonant in monosyllabic words is not pronounced. **Supra segmental features** are:1) Stress in most of the words lies on the second syllable, i.e. mi ˈnor, 2)speaker uses a low-rising pitch in the middle of sentences showing that the speaker intends to continue speaking, 3) Iambic meter (unstressed followed by stressed syllable) used by speaker.
Recording 5		✖		**Segmental features:**1) the word method /ˈmeθəd/, is pronounced as /meˈtɒd/ so speaker replaces the phoneme /θ/ with /t/, 2) the short phoneme/ i/ in the word I /ai/ is pronounced as the loud phoneme /iː/ 3) Monothongization; diphthongs are converted to monothongs i.e. The word affiliated /æfelietid/is pronounced as,ʼ/æfelætid/ **Super segmental features:** 1) most of the words are stressed on the second syllable i.e fiˈnal, 2) consonants are aspirated 3) rising pitch used in the end of sentences to indicate continuity.
Recording 6		✖		**Segmental features:** 1). short phoneme /i/in the word this is pronounced as /diːs/ instead of /ðis/. 2) The word how in the first line seems to be pronounced with a /x/ sound /xao/ instead of /hao/. 3) second last consonant cluster in word-final consonant cluster is not pronounced. For example the word, 'found' is pronounced as '/faud/' by the speaker. **Super segmental features:** 1) Over all stress is well placed but in some of the words second syllable is stressed e.g. frequency is stressed on second syllable. i.e. freˈquency, 2) The speaker is following the unstressed syllable followed by stressed syllable in her pattern of speech. 3) Speaker uses rising pitch at the end of sentences indicating that the speaker is planning to continue with her talk. She also stresses the important words in her conversation to attract the attention of the reader. This all makes her speech intelligible.
Recording 7	✖			**Segmental features**: 1)Final consonant is deducted in some words/fillers as in 'that' which is pronounced as /dæ/. 2) The English phoneme /ð/ is pronounced differently with the tongue touching the alveolar ridge rather than the front teeth. 3) the vowel /ei/ is pronounced as /æ/ in words like later which is pronounced as /lætə/. Mid vowel in words like separated is not

				pronounced: /sepereited/ becomes becomes /seprætid/ **Super segmental features**: 1) Stresses the first syllable like in most English words for example the words fictional and period are pronounced with stress on first syllable as in English. i.e. **ˈfictional, 2) some sounds are aspirated as in English words i.e. periods is pronounced as,' /ˈpʰiːriəd/ which is the correct pronunciation.3) she uses pitch words and pitch boundaries; the pitch of the whole sentence rises and falls frequently which tells that the speaker is insistent and emphatic in putting across her point.
Recording 8			✗	Her speech is less intelligible because of strong Thai accent and low pitch. **Segmental features:** 1)/ j/ is skipped in words like communicate, /kəjuːnikeit/ which are pronounced by speaker as /kəmuːnikæt/ 2) The English phoneme /d/ is pronounced as retroflex consonant /ɖ/ in words like,'they' which are pronounced as,' /ɖæ/ by the speaker instead of the English /ðei/.3) the final consonant in words ending in consonant clusters is dropped. For example the word, 'result' /rizʌlt/becomes /riːzɐl/. **Super segmental features: 1)** the key words are not stressed or emphasized and the speaker keeps speaking in a monotone or a flat tone making her speech less intelligible**, 2)** words are stressed on second syllable unlike English words which are mostly stressed on the first syllable. For example the word local is pronounced as /lɒˈkʰɐl/ 3) consonants are aspirated
Recording 9		✗		**Segmental features**: 1) The last consonant in syllables- final consonant clusters is removed and not pronounced by the speaker. i.e. notes, /nɒts/ is pronounced by the speaker as /nɒs/. Also the word crafting/krɑːftiŋ/ is pronounced as /kraːfiŋ/. 2) The last consonant is not pronounced in words like pole which are pronounced as, /pʰɒː/ instead of /pʰɒl/ 3) Additional final vowel is added by speaker in some words like /utrentə/ **Super segmental features**: 1) second syllable stressed even in tri syllabic words. For example speaker pronounces advocated like /edˈvɒkætid/ 2) key words are stressed by the speaker making it easier for the speaker to understand the sentence 3) In some of the words, the writer has used low pitch because of which the listener cannot understand those words at all.
Recording 10			✗	**Segmental features:** 1) final consonants are deducted in words like different which is pronounced as different /difrənt/ which are pronounced as /diːfən/ by the speaker. Also, the words perceive/pərsiːv/ and perception / are pronounced as /pʰɒsiːv/ and /pərzepʃən/ respectively. 2) Vowel is inserted between two syllables in disyllabic words. For example: the word business /biznes/ is pronounced as /biːsənes/ by the speaker. 3) Middle vowel is also not

				pronounced in monosyllabic words by the speaker. i.e. the word its is pronounced as /is/.4) The English phoneme /θ/ is replaced by /d/ in words like,' hypothesis'. **Super segmental features:** 1) Second syllable is stressed in most of the words. For example the word system ˈ/sistəm/ is pronounced as /sisˈtem/. 2) Puts stress on unimportant words as well because of which the listener is confused. 3) Connectors like 'but','and', 'usually' are stressed a lot.
Recording 11		✘		**Segmental features**: 1) syllable final consonants are removed/ not pronounced. For example the word older /ɒldə(r)/ is pronounced as /ɔdə/. 2) The vowels in the rime of a syllable are also skipped by the speaker. i.e. increasing is pronounced as /inki:ziŋ/ 3) The short vowel /i/is pronounced as a long vowel /i:/ ; the word English /iŋliʃ/ is pronounced as /i:ŋliʃ/ **Super segmental features:** 1) Four syllable words are converted to tri syllable words. i.e. interested /interəstid/ is pronounced as /in/tæ:s/tid/. 2) Second syllables are stressed like most of the above speakers. The word research is pronounced with stress on the second syllable: reˈsearch, 3. The words like ruby cycle? are not clearly understood because of missing consonants or low pitch may be.

Transcription of Speech Samples and Samples of Transcription Validation

Validation of the Transcription of Speech Sample

Name _____ David Perrodin _____

Qualification :

First Language: _____ English _____

Education: ___ Ph.D. in Christian Counseling _____

Working: ____ Adjunct Professor - KMITL _____

Signature _____

Recording 1

Um... well ...Ba..Basically, well...I'm gonna talking about if in the area of the political economy in Thailand. And..um..so..so far we probably got to focus about the poverty in Thailand and see about the inequality of the um…low income people in Thailand. And, then trying to find that actually the inequality and insecurity actually are connected that people..ah... forgot to see about the problem about the insecurity about ..um.. low income class people. And then...um… probably I'm not gonna talking about Thailand only. Thailand is gonna be the main...um…case   study   in   my   project. But...um...definitely I'm gonna campare it with the...um…all the nations. And, probably it will be in south East Asia as well. And I think I'm gonna pick um Korea as...ah... example country because Korea is one of the top rank nations in East Asia.

Total Words 135

Agreement: 135 words

Disagreement as highlighted: 0 words

Recording 2

Yeah. For my PhD research, I think I'm still gonna stick to the same subject about cross dressing. But I will work in further fields like other gen..other genres of films like it's…it can be western, it can be classic or like British film any…any other film that deals with cross dressing and I will look it in…in terms of the cinematic affect and cinematic tools how the directors..uh.. is there anything like behind behind the view of cross dressing rather than lesbianism or homosexuality. I think there's..there's gonna be some other kind of factors about this…this kind of dealing with the cross dressing in terms of society or economics or whatever.

Total Words 112

Agreement: __112__ words

Disagreement as highlighted: ___0___ words

Ah..Back to the hypothesis … ah it's lie on ah.. different area…they perceive different perception. They have…they have different perception about pollutions. The problem now I want to argue…argue the problem now is normally environmental management system they…they design for one fit all. For example in…in…in one area uh…the business sector usually…ah…implement one…one management system for…for all whole the area but it doesn't work. The… the business sector have to lie a specific uh…their… their management system for…for each location depend on the perception of stakeholder.

Total Words 86

Agreement: __86__ words

Disagreement as highlighted: ___0___ words

Appendix H

Pronunciation Respelling System

International Phonetic Alphabet (IPA)	Scholastic Dictionary Symbol	Example word(s)
Consonants		
p	p	pink
b	b	boy
t	t	tall
d	d	dog
tʃ	ch	chair
dʒ	j	jump, giant
k	k	car, kite, quit
g	g	girl
f	f	fun, phone
v	v	van
θ	th	thanks
ð	th	these
s	s	sun
z	z	zoo
ʃ	sh	shine
ʒ	zh	measure
m	m	man
n	n	nice
ŋ	ng	king
h	h	happy
l	l	love
ɹ	r	run
j	y	yellow
w	w	water
Vowels		
æ	a	dat
eɪ	ay	day
ɛər	air	hair
ɑː	ah	father
ɑr	ar	arm
ɛ	e	let
iː	ee	see
ɪər	ihr	here
ɪ	i	pit
aɪ	ie	by
ɒ	o	pot
oʊ	oh	no
ɔː	aw	caught
ɔr	or	north
ɔɪ	oi	noise
ʊ	u	took
ʊər	oor	tour
uː	oo	soon
aʊ	ou	out
ʌ	uh	cut
ɜr	UR	word
ə	uh	about
ər	ur	Butter
Stress: A *(capitalized letters)*		

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Appendix I

Transcription Form

Stimuli					
1	Pseudo Transcription				
			I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
			I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
			I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
			I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
			I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
2	Pseudo Transcription				
			I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
			I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
			I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
			I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.

Samples of Real Transcription Data from Participants

Transcription Task
Recording 1

3

Stimuli					
	Well, basically				
1	**Pseudo Transcription**				
		I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
		I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
		I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
		I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
		I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
	What I'm going to talking about				
2	**Pseudo Transcription**				
		I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
		I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
		I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
		I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
		I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
	in the area of the political economy				
3	**Pseudo Transcription**				
	polikikal	I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
		I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
		I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
		I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
		I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.

in Thailand

Pseudo Transcription			
4		I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
		I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
		I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
		I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
		I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.

And so, so far

Pseudo Transcription			
5		I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
		I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
		I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
		I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
		I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.

We ___ gonna focus about the poverty in Thailand

Pseudo Transcription			
6	Pron Kee	I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	✓ I am not sure what is being said.
		I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
		I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
		I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
		I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.

	And see about the inequality				
	Pseudo Transcription				
7			I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
			I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
			I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
			I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
			I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.

	Of the lower income people.				
	Pseudo Transcription				
8			I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
			I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
			I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
			I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
			I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.

	Thailand				
	Pseudo Transcription				
9			I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
			I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
			I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
			I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.
			I know this word but do not know how to spell it correctly.	I have not heard this word before but can catch what the speaker intended to say.	I am not sure what is being said.

Appendix K

Questionnaire

Part I

Personal Information

If you provide your name and/or your email address, these will remain entirely confidential and your anonymity will be protected at all times.

Name (optional)_____

Male/Female (circle as appropriate)

Age (circle as appropriate) 20 – 29   30 – 39   40 – 49   50 – 59   60+

Country of Birth_____

Country where you live now/ for how long?_____

Mother tongue_____

Other languages you speak_____

Familiarization with international accent of English (circle as appropriate)

Very familiar   Fairly Familiar   Not Familiar

Email Address_____

Please list five English accents that you think are the best for international communication (with the best English accent as no.1)

1_____   4_____

2_____   5_____

3_____

Part II

Please transcribe the following recordings in the form attached and rate how much do you feel toward each of them (<u>in term of international communication</u>).

(a) Correctness   (d) Friendly

(b) Acceptable   (e) Intelligent

(c) Pleasant   (f) Intelligible

_____

a) very correct   1   2   3   4   5   6   very incorrect

b) very acceptable   1   2   3   4   5   6   very unacceptable

c) very pleasant   1   2   3   4   5   6   very unpleasant

d) very friendly   1   2   3   4   5   6   very unfriendly

e) very intelligent   1   2   3   4   5   6   very unintelligent

f) very intelligible   1   2   3   4   5   6   very unintelligible

<center>**Appendix L**</center>

<center>Participants Consent Letter</center>

Informed Consent Form

Dear Participant,

My name is Jirada Suntornsawet, and I am a PhD student in Department of Education, the University of York, UK.

You are invited to participate in my research study. The following information is provided in order to help you to make an informed decision whether or not to participate. If you have any questions please do not hesitate to ask.

You are eligible to participate in this project because you are either the native speaker of English, or non-native speaker of English, or non native speaker of English having Thai as the first language. The main purpose of this study is to investigate **'At what level of Thai English is intelligible for different groups of English users'**.

Participation in this study will require approximately 2 hours of your time. During this time you will be asked to perform the transcription tasks and fill in the questionnaire concerning your personal background, attitudes and familiarity towards non-native varieties of English.

Your performance in the transcription tasks and responses to the questionnaire are very important. The data will only be used by those involved in this study which includes linguistic experts, my supervisor, and me.

Your participation in this study is voluntary. You are free to decide not to participate in this study or to withdraw at any time. If you choose to participate, you may withdraw at any time by notifying me. Upon your request to withdraw, all information pertaining to you will be destroyed. If you choose to participate, all information will be held in strict confidence. The data collected from you in this research will be kept for 2 years after the date that data is given. If you wish to withdraw your data, you can notify me at anytime via email contact. Your response will be considered only in combination with those from other

participants. The information obtained in the study may be published in scientific journals or presented at scientific meetings and further analyzed in the future study concerning educational purposes; your identity however, will be kept strictly confidential. A pseudonym will be used in every process to protect your information and identity.

If you are willing to participate in this study, please sign the following statement. In case you have any complaints to be made regarding this research and its procedure, please contact directly to the research supervisor, Dr. Beatrice Szczepek Reed at beatrice.reed@york.ac.uk, or Dr. Emma Marsden, Chair of the Education Ethics Committee at emma.marsden@york.ac.uk.

Sincerely,

Miss Jirada Suntornsawet

Researcher

Email address: js1712@york.ac.uk

VOLUNTARY CONSENT FORM

Participant Part:

I hereby certify that I have read and understand the information on the form. The researcher has my consent to volunteer to be an informant in this. I understand that my responses are completely confidential and that I have the right to withdraw at any time. I have received a copy of this informed Consent Form to keep in my possession.

Name: _____

Phone number or location where you can be reached:

_____

_____

_____

Signature_____(Participant)

(_____)

Date_____

Researcher Part:

I hereby certify that I have explained to the above individual the nature and purpose, the potential benefits, and possible risks associated with participating in this

research study, have answered any questions that have been raised, and have witnessed the above procedure.

Signature_____(Researcher)

(_____)

Date_____

Appendix M

Statistical Analysis Tables

Table M1

The SPSS Repeated Measures ANOVA: Test of Within-Subjects Effects Output for Effect of

Thai Accentedness in English Pronunciation on the Intelligibility of Overall Groups of

Listeners

Source		Type III of Squares	D.F.	Mean Square	F	Sig.	Partial Eta Squared
Accent	Sphericity Assumed	3320.90	2	1660.45	24.25	.00	.35
	Greenhouse-Geisser	3320.90	1.48	2238.47	24.25	.00	.35
	Huynh-Feldt	3320.90	1.52	2180.24	24.25	.00	.35
	Lower-bound	3320.90	1.00	3320.90	24.25	.00	.35
Error (Accent)	Sphericity Assumed	6026.43	88	68.48			
	Greenhouse-Geisser	6026.43	65.28	92.32			
	Huynh-Feldt	6026.43	67.02	89.92			
	Lower-bound	6026.43	44.00	136.96			

Table M2

The SPSS Pairwise Comparison Output for Effect of Thai Accentedness in English

Pronunciation on the Intelligibility of Overall Groups of Listeners

(I) Accent	(J) Accent	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	Upper Bound
Weak	Moderate	3.22*	1.13	.02	.40	6.05
	Strong	11.76*	1.89	.00	7.04	16.47
Moderate	Weak	-3.22*	1.13	.02	-6.05	-.40
	Strong	8.53*	2.06	.00	3.40	13.66
Strong	Weak	-11.76*	1.89	.00	-16.47	-7.04
	Moderate	-8.53*	2.06	.00	-13.66	-3.40

Based on estimated marginal means

* Significant Level at .05

Adjustment for multiple comparisons: Bonferroni

Table M3

The SPSS One Way ANOVA Output for Effect of Overall Thai Accent in English

Pronunciation on Level of Intelligibility of Each Group of Listeners

Source	Type III Sum of Squares	D.F.	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	17875.51[a]	2	8937.76	65.11	.00	.76
Intercept	2822008.02	1	2822008.02	20557.63	.00	1.00
Listeners	17875.51	2	8937.76	65.11	.00	.76
Error	5765.47	42	137.27			
Total	2845649.00	45				
Corrected Total	23640.98	44				

a. R Squared = .756 (Adjusted R Squared = .745)

Table M4

The SPSS Multiple Comparison (Tukey HSD) Output for Effect of Overall Thai Accent in

English Pronunciation on Level of Intelligibility of Each Group of Listeners

(I) Listeners	(J) Listeners	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
NSs	NNSs	31.13*	4.28	.00	20.74	41.53
	Thais	-17.00*	4.28	.00	-27.40	-6.61
NNSs	NSs	-31.13*	4.28	.00	-41.53	-20.74
	Thais	-48.13*	4.28	.00	-58.53	-37.74
Thais	NSs	17.00*	4.28	.00	6.61	27.40
	NNSs	48.13*	4.28	.00	37.74	58.53

Based on observed means.

The error term is Mean Square (Error) = 137.27.

* Significant Level at .01

Table M5

The SPSS Mixed ANOVA: **Test of Within-Subjects Effects** *Output for the Effect of Level of Accent and L1 Groups of Listeners on*

Intelligibility Scores

		Type III Sum of Squares	D.F.	Mean Square	F	Sig.	Partial Eta Squared
Accent	Sphericity Assumed	3320.90	2	1660.45	75.52	.00	.64
	Greenhouse-Geisser	3320.90	1.93	1721.75	75.52	.00	.64
	Huynh-Feldt	3320.90	2.00	1660.45	75.52	.00	.64
	Lower-bound	3320.90	1.00	3320.90	75.52	.00	.64
Accent*Listeners	Sphericity Assumed	4179.45	4	1044.86	47.52	.00	.69
	Greenhouse-Geisser	4179.45	3.86	1083.43	47.52	.00	.69
	Huynh-Feldt	4179.45	4.00	1044.86	47.52	.00	.69
	Lower-bound	4179.45	2.00	2089.73	47.52	.00	.69
Error (Accent)	Sphericity Assumed	1846.98	84	21.99			
	Greenhouse-Geisser	1846.98	81.01	22.80			
	Huynh-Feldt	1846.98	84.00	21.99			
	Lower-bound	1846.98	42.00	43.98			

Table M6

*The SPSS Mixed ANOVA: **Test of Between-Subjects Effects** Output for the Effect of Level*

of Accent and L1 Groups of Listeners on Intelligibility Scores

Source	Type III Sum of Squares	D.F.	Mean Square	F	Sig.	Partial Eta Squared
Intercepts	940669.34	1	940669.34	20557.63	.00	1.00
Listeners	5958.50	2	2979.25	65.11	.00	.76
Error	1921.82	42	45.76			

Table M7

The SPSS Multiple Comparison (Tukey HSD) Output for the Effect of Level of Accent and

L1 Groups of Listeners on Intelligibility Scores

(I) Listeners	(J) Listeners	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
NSs	NNSs	10.378[*]	1.43	.00	6.91	13.84
	Thais	-5.67[*]	1.43	.00	-9.13	-2.20
NNSs	NSs	-10.38[*]	1.43	.00	-13.84	-6.91
	Thais	-16.04[*]	1.43	.00	-19.51	-12.58
Thais	NSs	5.67[*]	1.43	.00	2.20	9.13
	NNSs	16.04[*]	1.43	.00	12.58	19.51

Significant Level at .01

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Table M8

The SPSS Test of Between-Subjects Effects Output for Intelligibility Scores of Each L1

*Groups of Listeners for **Weak** Accent*

Source	Type III Sum of Squares	D.F.	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	504.40[a]	2	252.20	9.93	.00	.32
Intercept	352185.80	1	352185.80	13865.58	.00	1.00
Listeners	504.40	2	252.20	9.93	.00	.32
Error	1066.80	42	25.40			
Total	353757.00	45				
Corrected Total	1571.20	44				

a. R Squared = .321 (Adjusted R Squared = .29)

Table M9

The SPSS Multiple Comparison (Tukey HSD) Output for Intelligibility Scores of Each L1

*Group of Listeners for **Weak** Accent*

(I) Groups of Listeners	(J) Groups of Listeners	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	Upper Bound
NSs	NNSs	7.20*	1.84	.00	2.73	11.67
	Thais	.20	1.84	.99	-4.27	4.67
NNSs	NSs	-7.20*	1.84	.00	-11.67	-2.73
	ThaiS	-7.00*	1.84	.00	-11.47	-2.53
Thais	NS	-.20	1.84	.99	-4.67	4.27
	NNS	7.00*	1.84	.00	2.53	11.47

*Significant Level at .01

Table M10

The SPSS Test of Between-Subjects Effects Output for Intelligibility Scores of Each L1

Groups of Listeners for **Moderate** *Accent*

Source	Type III Sum of Squares	D.F.	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	1718.04[a]	2	859.02	19.63	.00	.48
Intercept	326997.69	1	326997.69	7471.12	.00	.99
Listeners	1718.04	2	859.02	19.63	.00	.48
Error	1838.27	42	43.77			
Total	330554.00	45				
Corrected Total	3556.31	44				

a. *R Squared = .483 (Adjusted R Squared = .46)*

Table M11

The SPSS Multiple Comparison (Tukey HSD) Output for Intelligibility Scores of Each L1

Group of Listeners for **Moderate** *Accent*

(I) Groups of Listeners	(J) Groups of Listeners	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	Upper Bound
NSs	NNS	14.93[*]	2.41	.00	9.06	20.80
	Thais	5.33	2.41	.08	-.53	11.20
NNSs	NS	-14.93[*]	2.41	.00	-20.80	-9.06
	Thais	-9.60[*]	2.41	.00	-15.47	-3.73
Thais	NS	-5.33	2.41	.08	-11.20	.53
	NNS	9.60[*]	2.41	.00	3.73	15.47

Significant Level at .01

Table M12

The SPSS Test of Between-Subjects Effects Output for Intelligibility Scores of Each L1

*Groups of Listeners for **Strong** Accent*

Source	Type III Sum of Squares	D.F.	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	7915.51[a]	2	3957.76	192.45	.00	.90
Intercept	264806.76	1	264806.76	12876.52	.00	1.00
Listeners	7915.51	2	3957.76	192.45	.00	.90
Error	863.73	42	20.56			
Total	273586.00	45				
Corrected Total	8779.24	44				

a. R Squared = .902 (Adjusted R Squared = .90)

Table M13

The SPSS Multiple Comparison (Tukey HSD) Output for Intelligibility Scores of Each L1

*Group of Listeners for **Strong** Accent*

(I) Groups of Listeners	(J) Groups of Listeners	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	Upper Bound
NSs	NNSs	9.00*	1.65	.00	4.98	13.02
	Thais	-22.53*	1.65	.00	-26.56	-18.51
NNSs	NSs	-9.00*	1.65	.00	-13.02	-4.98
	Thais	-31.53*	1.65	.00	-35.56	-27.51
Thais	NSs	22.53*	1.65	.00	18.510	26.56
	NNSs	31.53*	1.65	.00	27.510	35.56

*Significant Level at .01

Table M14

The SPSS Test of Within-Subjects Effects Output for NSs' Intelligibility Scores through

Levels of Accent

Source		Type III of Squares	D.F.	Mean Square	F	Sig.	Partial Eta Squared
Accent	Sphericity Assumed	3720.58	2	1860.29	108.95	.00	.89
	Greenhouse-Geisser	3720.58	1.90	1957.51	108.95	.00	.89
	Huynh-Feldt	3720.58	2.00	1860.29	108.95	.00	.89
	Lower-bound	3720.58	1.00	3720.58	108.95	.00	.89
Error (Accent)	Sphericity Assumed	478.09	28	17.07			
	Greenhouse-Geisser	478.09	26.61	17.97			
	Huynh-Feldt	478.09	28.00	17.07			
	Lower-bound	478.09	14.00	34.15			

Table M15

The SPSS Pairwise Comparison Output for NSs' Intelligibility Scores through Levels of

Accent

(I) Accent	(J) Accent	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Weak	Moderate	-1.07	1.67	.53	-4.64	2.51
	Strong	18.73*	1.38	.00	15.78	21.69
Moderate	Weak	1.07	1.67	.53	-2.51	4.64
	Strong	19.80*	1.47	.00	16.65	22.95
Strong	Weak	-18.73*	1.38	.00	-21.67	-15.78
	Moderate	-19.80*	1.47	.00	-22.95	-16.65

Based on estimated marginal means
* Significant Level at .01

Table M16

*The SPSS Test of Within-Subjects Effects Output for **NNSs'** Intelligibility Scores through Levels of Accent*

Source		Type III of Squares	D.F.	Mean Square	F	Sig.	Partial Eta Squared
Accent	Sphericity Assumed	3291.73	2	1645.87	50.33	.00	.78
	Greenhouse-Geisser	3291.73	1.82	1813.02	50.33	.00	.78
	Huynh-Feldt	3291.73	2.00	1645.87	50.33	.00	.78
	Lower-bound	3291.73	1.00	3291.73	50.33	.00	.78
Error (Accent)	Sphericity Assumed	915.60	28	32.70			
	Greenhouse-Geisser	915.60	25.42	36.02			
	Huynh-Feldt	915.60	28.00	32.70			
	Lower-bound	915.60	14.00	65.40			

Table M17

*The SPSS Pairwise Comparison Output for **NNSs'** Intelligibility Scores through Levels of Accent*

(I) Accent	(J) Accent	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Weak	Moderate	6.67*	2.14	.01	2.07	11.26
	Strong	20.53*	1.75	.00	16.78	24.28
Moderate	Weak	-6.67*	2.14	.01	-11.23	-2.07
	Strong	13.87*	2.33	.00	8.87	18.86
Strong	Weak	-20.53*	1.75	.00	-24.28	-16.78
	Moderate	-13.87*	2.33	.00	-18.86	-8.87

Based on estimated marginal means
* Significant Level at .01

Table M18

*The SPSS Test of Within-Subjects Effects Output for **Thais'** Intelligibility Scores through Levels of Accent*

Source		Type III of Squares	D.F.	Mean Square	F	Sig.	Partial Eta Squared
Accent	Sphericity Assumed	488.04	2	244.02	15.07	.00	.52
	Greenhouse-Geisser	488.04	1.90	256.62	15.07	.00	.52
	Huynh-Feldt	488.04	2.00	244.02	15.07	.00	.52
	Lower-bound	488.04	1.00	488.04	15.07	.00	.52
Error (Accent)	Sphericity Assumed	453.29	28	16.19			
	Greenhouse-Geisser	453.29	26.63	17.02			
	Huynh-Feldt	453.29	28.00	16.19			
	Lower-bound	453.29	14.00	32.38			

Table M19

*The SPSS Pairwise Comparison Output for **Thais'** Intelligibility Scores through Levels of Accent*

(I) Accent	(J) Accent	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Weak	Moderate	4.07*	1.60	.02	.63	7.50
	Strong	-4.00*	1.48	.02	-7.17	-.83
Moderate	Weak	-4.07*	1.60	.02	-7.50	-.63
	Strong	-8.07*	1.31	.00	-10.88	-5.25
Strong	Weak	4.00*	1.48	.02	.83	7.17
	Moderate	8.07*	1.31	.00	5.25	10.88

Based on estimated marginal means
* Significant Level at .05

Table M20

The SPSS Correlation Coefficient (Spearman's Rho) Output for Attitudes and Actual

Intelligibility Scores

		Intelligibility Scores	**Attitudes**
Intelligibility Scores	Correlation Coefficient	1.00	.27*
	Sig. (2-tailed)	.	.00
	N	135	135
Attitudes	Correlation Coefficient	.27*	1.00
	Sig. (2-tailed)	.00	.
	N	135	135

*Significant Level at .05

Table M21

The SPSS Correlation Coefficient (Spearman's Rho) Out for Familiarity in International

Accent of English and Actual Intelligibility Scores

		Intelligibility Scores	**Familiarity to International Accent of English**
Intelligibility Scores	Correlation Coefficient	1.00	-.04
	Sig. (2-tailed)	.	.65
	N	135	135
Familiarity to International Accent of English	Correlation Coefficient	-.04	1.00
	Sig. (2-tailed)	.65	.
	N	135	135

Table M22

The SPSS Correlation Coefficient (Spearman's Rho) Output for Perceived Intelligibility Actual Intelligibility Scores

		Intelligibility Scores	**Perceived intelligibility**
Intelligibility Scores	Correlation Coefficient	1.00	.51*
	Sig. (2-tailed)	.	.00
	N	135	135
Perceived Intelligibility	Correlation Coefficient	.51	1.000
	Sig. (2-tailed)	.00	.
	N	135	135

Significant Level at .05

Transcription of Most Frequently Found Problematic Words

NSs Transcription

Transcription	PROBABLY	DRESSING	GENRE	LESBIANISM	HYPOTHESIS	ENVIRONMENTAL	MANAGEMENT	DESIGN
Orthographic	primarily [4]	-	charms [3] job [2]	less many less mentioning less many students repressed	equality high quality	I'm at home [5] I rode home ever at home I'm at that at my home everyone at home	in the in the men and its mid mentions manchester [2] in this assistant	decide [15]
Pseudo	promlee prandee pronkee promuhrlee promilee promig probli promhahli	-	chuns jons jawnz chong jonre chons choms	blasminen lesmeneestoo sil meneesoon leseniven less mana soon veneesuhn lasminising menistuhn mesmenisin lesmenisoon	akwuhuhn apoleezay aboleeza hiepotheeiee iruhlt hiepolithik hiepolisin hiebodeezay agwuhleesay	emurd emuhhoume emethin emuruhnoh amidhominad	minsur menchuh maje isin men muhnisuhnt minoistim	
Omission	-	-	-	-	-	-	-	-

Notes: *The superscript numbers are the number of listeners showing the same transcription.*
Only the error transcription and omission data are presented in the Table.

NNSs Transcription

Transcription	PROBABLY	DRESSING	GENRE	LESBIANISM	HYPOTHESIS	ENVIRONMENTAL	MANAGEMENT	DESIGN
Orthographic	promise	the something	song	less many	I go with it	I am homelly	main[2]	decide[14]
		I think[3]	chunk	less assum	policies	it will help	min	
		subject	chances[3]	los of soon	I would say	in our home	misunderstood	
		sination	charms	less many	thai policy	for minute	my	
		essay[3]		replace many scene	ecolism	my home	as many as	
		ter		what many assume	algorithm[2]	in my home	sustained	
				less many film		in the home		
				many esteem		at home		
				less many		it was the home		
				less many fiuh		I worked home		
						warmless		
						in my home is		
						in our home		
Pseudo	prongo		chanz	blasmison	kwaliti	ererpert	mantthant	dilisa
	prgos		chom	restaneesoon	akwalitik	amerant home	minimant	
	pronglee		tranks	kisbianlism	weisit		mentest	
	proteree		chons	lisibianlism	hiepuhlise		make	
	pogeiti		joms		akorize		main	
	poorganis		jonks		awgorizit		in main	
	pronigar		fiuhns					
	proulee		cho					
	prannigar		cham					
Omission	1	1	-	-	-	-	2	-

Notes: *The superscript numbers are the number of listeners showing the same transcription.*
Only the error transcription and omission data are presented in the Table.

Thais Transcription

Transcription	PROBABLY	DRESSING	GENRE	LESBIANISM	HYPOTHESIS	ENVIRONMENTAL	MANAGEMENT	DESIGN
Orthographic	promptly [2]	literacy	-	mechanism	-	-	-	-
	permanently	I think						
		racing						
Pseudo	promnikesuh	tuasik	-	respektism	-	-	-	-
	pohlijet	aysik		resmihrlism				
	pronigayt	resting		lesspenism				
	promniget	dooiethik		nasmanism				
	promni	raystik		meissanism				
	promikuh	metik		spannism				
	poleegeisuh	dooaythik		lessmanizuhm				
		dooraysi		aspanism				
		thuastik		masnalism				
				spairnism				
				rahsmairnism				
				magmuhnism				
Omission	2	-	-	-	-	-	-	-

Notes: The superscript numbers are the number of listeners showing the same transcription.
Only the error transcription and omission data are presented in the Table.

Phonological Analysis of Problematic Words from Each Group of Listeners

Problematic words from more than half of NSs and NNSs

Table O1

*Phonetic Transcription of "**Further**"*

Standard Pronunciation					
	CMU	f	ɝ	ð	ɝ
	BrE	f	ɜː	ð	ə
	AmE	f	ɝː	ð	ɚr
Speech Sample Pronunciation	T-E	**f**	**ɜː**	**t**	**ə**
Trend of Transcription	NSs	✔	ər	✔	ə
	NNSs	✔	ər	✔	ə
	Thai	✔	✔	✔	✔

From analysis of the vowels in standard pronunciation, it is evident that the American pronunciation pronounces rhotic vowel while for British English rhotic sound is omitted. The other consonantal sounds are pronounced similarly among the standard pronunciation.

As can be seen, in the word further [fɝðɝ], regarding mispronounced consonantal sounds, the Thai speaker pronounced voiced dental fricative [ð] as voiceless alveolar stop [t] which is the result from sound assimilation. As for the vowel, the speaker pronounced it similar to British English with no rhoticity at the end of the vowel. The listeners had no problem in perceiving the initial consonant as accurate to the standard pronunciation and Thai English pronunciation. The majority of participants interpreted this word as, for the, which can be the result of word prediction because it is the meaningful word that can be use in this instance. As such, it was assumed that consonantal sounds are not the main threat to intelligibility in this case but suprasegementals.

Non-Standard sound features causing intelligibility failure.

- The pronunciation of voiced dental fricative [ð] as voiceless alveolar stop [t]

Table O2

*Phonetic Transcription of "**System**"*

Standard	**CMU**	s	ɪ	s	tʰ	ə	m
Pronunciation	**BrE-AmE**	s	ɪ	s	t	ə	m
Speech Sample Pronunciation	**T-E**	**s**	**ɪ**	**s**	**t**	**ɛ**	**m**
Trend of Transcription	**NSs**	✔	✖	✖	ð/t/tʰ/	ɛ	m
	NNSs	✖	ə	s	tʰ	✖	n
	Thai	✔	✔	✔	✔	✔	✔

From analysis of the standard reference pronunciations it can be seen that they are similar with the exception of the aspiration of [tʰ] in CMU. Hence, this can be viewed as a variant of the phoneme rather than a distinctive feature to be analysed. There is only one vowel feature that Thai English pronounces differently from NSs guidelines. Instead of using unstressed schwa, the speaker used fully stressed open-mid front vowel [ɛ].

NSs tended to fail to perceive the pronunciation of the coda sound voiceless alveolar fricative [s] of the first syllable as targeted. Then, they perceived voiceless alveolar stop [t] in the onset position of the second syllable variously as shown in the table according to the possible variants of this phoneme. On the contrary, NNSs perceived the rhyme section of the first syllable of this word but without onset sound. Moreover, their perception of the vowel in this syllable was schwa which was not pronounced by the speaker nor was the targeted pronunciation of the speaker. The trend of how they perceived the vowel in the second syllable is extremely varied and unable to set.

According to the Thai English pronunciation of this speaker, it can be seen that in fact the pronunciation was not too much deviated from the references while the perception

of the participants was. This suggests that the main intelligibility threat for this item was not segmentals but suprasegmentals.

Non-standard sound features causing intelligibility failure.

- The pronunciation of unstressed schwa [ə] as open mid front vowel [ɛ]

Table O3

*Phonetic Transcription of "**One**"*

Standard	CMU	w	ə	n
Pronunciation	BrE-AmE	w	ʌ/ ɒ	n
Speech Sample Pronunciation	T-E	**w**	**a**	**n**
Trend of	NSs	✔	ɒ	t
	NNSs	✔	ɒ	t
Transcription	Thai	✔	✔	✔

All of NSs and NNSs participants except Thais had a problem in perceiving this word correctly and interestingly that they all orthographically transcribed it as what [wɒt]. As illustrated, they had no problem in perceiving bilabial glide [w] as pronounced by the speaker. However, the problem arose when perceiving the mispronounced unstressed vowel [ə] or [ʌ] as stressed vowel [ɒ] when led to the interpretation of another meaningful word with this same onset and vowel, what [wɒt]. Also, even though the speaker pronounced [n] at the end it was not strongly released as per standard pronunciation.

For this word, the consonantal sounds were pronounced similarly in all standard pronunciation references, while vowel sounds were all pronounced differently which can be claimed as a variant across L1. When Thai English was compared, it is clear that the consonantal sounds were produced per standard pronunciation, but the vowel sound was pronounced as [a]. This implies that the vowel pronounced for the word one was quite inconsistent among NSs themselves. Thus, it is difficult to claim that the different pronunciation from the Thai speaker was the threat to intelligibility for this word.

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Problematic Words from More Than Half of NSs

Table O4

*Phonetic Transcription of "**See**"*

Standard	CMU	s	i:
Pronunciation	BrE- AmE	s	i:
Speech Sample Pronunciation	T-E	s	i:
Trend of Transcription	NSs		θɪŋk
	NNSs	✔	✔
	Thai	✔	✔

According to the comparison of standard pronunciation and Thai English, it can be seen that all sound features in this word were pronounced similarly. Interestingly, most of the NSs participants (10 from 15) interpreted the word see here as think with the use of orthographic transcription indicating that they were certain about their perception of this word. It is evident that see and think have no shared or comparable pronunciation features. In addition, the speaker pronounced this word accurately to the standard pronunciation. As can be seen, the error in transcribing the sounds of this word was phonetically idiosyncratic. In addition, none of the NNSs and Thai participants had a problem transcribing this word. When looking back to the full sentence in the original transcription of the speech sample, the word see was in the sentence as "*And..um..so..so far we probably got to focus about the poverty in Thailand and **see** about the inequality of the um…low income people in Thailand.*" This implies that the influence of the syntactical process and personal context interpretation of native speakers were beyond the actual pronunciation they perceived. To elaborate, preposition about is usually and commonly preceded by the verb think rather than the verb see. In addition, the use of think in this context might make more sense in language recognition of native speakers. Therefore, while performing

transcription task, the majority of NS participants interpret this word as think. From this point, it is worth further discussion of the influences that affect the intelligibility of native speakers out with pronunciation. Given that it is their mother tongue, they have more lexeme items such as lexical chunks as phrasal verbs in their language repertoire and are more familiar with the use of the word in different contexts. These factors differently affect intelligibility of NSs when compared to the other participant groups who relied on the pronunciation of the words only. In addition, it alludes to the fact that, during the intelligibility process, NS participants used comprehensibility and interpretability more so than the other groups of participants. Finally, to transcribe see as think here, did not alter the meaning of the context, but was to correct the language used to be more appropriate which is called auto-correction by native speakers.

Table O5

*Phonetic Transcription of "**Argue**"*

Standard Pronunciation	**CMU**	ɑ	r	g	ju	-
	BrE	ɑː	-	g	juː	-
	AmE	ɑː	r	g	juː	-
Speech Sample Pronunciation	**T-E**	a	-	k	ɪ	w
Trend of Transcription	**NSs**	a	✖	k/g	u	l
	NNSs	✔	✔	✔	✔	✔
	Thai	✔	✔	✔	✔	✔

In this word, from standard pronunciation, we can see that the vowel sound in the initial syllable is pronounced differently in the length [ɑ] in CMU and [ɑː] in both American English and British English in the Longman Pronunciation Dictionary. In this feature, Thai English pronounced as the latter. For coda of the first syllable, American English both in CMU and Longman Pronunciation Dictionary pronounce [r] sound but in British English [r] sound is dropped as found in T-E. In the second syllable, onset [g] was

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pronounced the same both in standard pronunciation and T-E. As for the nucleus position, all standard pronunciation pronounced it as [ju:] while T-E pronounced it far differently [iw].

Analysis demonstrated that the sounds pronounced similarly to the standard pronunciation were [ɑ:] and velar stop [g]. The rest of the sounds were pronounced disparately from the standard pronunciation as listed. However, only NSs failed to recognise the sounds accurately. Monophthongization was also noted as a problem here: [ju] was pronounced as [i] and ended the syllable with the use of vowel-like sound which was approximant bilabial glide [w] to assimilate the sound as [iw] instead.

Non-standard sound features causing intelligibility failure.

- The pronunciation of open back vowel [ɑ] as open front [a]

- Monophthongization: combine the pronunciation of diphthong palatal glide [j] and close back vowel [u] as monophthong close front vowel [i]

- Add final diphthong [ju] with bilabial glide [w]

Problematic words from more than half of NNSs

Table O6

*Phonetic Transcription of "**Film**"*

Standard	CMU	f	ɪ	l	m
Pronunciation	BrE-AmE	f	ɪ	l	m
Speech Sample Pronunciation	T-E	f	ia	-	m
Trend of	NSs	✔	✔	✔	✔
Transcription	NNSs	✔	i:/ɪ	✔	✘
	Thai	✔	✔	✔	✔

In term of consonants, this word was pronounced in the same way as the standard pronunciation references in all guidelines used and was perceived accurately by NS and Thai participants. However, when considering the vowel, the standard pronunciation

pronounced the vowel as single vowel: close front vowel, and the final consonant is cluster [m]. For this Thai speaker, dipthong [ia] was employed instead and the [lm] cluster is simplified by dropping [l] and retaining [m] only as typical Thai English pronunciation. This word was not intelligible to most NNSs. From the transcriptions, they mostly transcribed it as feeling. As illustrated, NNSs did not have a problem perceiving the initial consonant, the issue arose when perceiving final consonant [m] at the final position of the word.

Non-standard sound features causing intelligibility failure.

-        Cluster simplification: dropping consonant [lm] as [m]

-        The pronunciation of diphthong [ia] instead of single vowel [ɪ]

Table O7

Phonetic Transcription of "Effect"

Standard	CMU	ɪ	f	ɛ	k	t
Pronunciation	BrE-AmE	ə	f	e	k	t
Speech Sample Pronunciation	T-E	ə	**f**	**ɛ**	k̚	-
Trend of	NSs	✔	✔	✔	✔	✔
	NNSs	ɒ	v	(f) eɪ	✖	✖
Transcription	Thai	✔	✔	✔	✔	✔

This word effect was failed to be intelligible by NNSs participants only. From the analysis of standard pronunciation references, vowel sounds are pronounced differently in both syllables which is considered the variant across L1. However, for Thai English, the crucial intelligibility threat was cluster simplification: lack of final consonant cluster.

To elaborate, in the sounds that were pronounced accurately to the standard pronunciation as [f], [ɛ], and [k], they were perceived by NNSs as [v], [eɪ], and none, respectively. Also,

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the participants did not perceive final consonant [t] as it was not clearly released by the speaker.

Non-standard sound features causing intelligibility failure.

-        Cluster simplification: lack of final consonant released: alveolar stop [t]

Problematic words from more than half of Thais.

Table O8

Phonetic Transcription of "Cinematic"

Standard Pronunciation	**CMU**	s	ɪ	n	ə	m	æ	t	ɪ	k
	BrE	s	ɪ	n	ə	m	æ	t	ɪ	k
	AmE	s	ɪ	n	ə	m	æ	ţ	ɪ	k
Speech Sample Pronunciation	**T-E**	s	ɪ	n	-	m	æ	t	ɪ	k⌐
Trend of Transcription	**NSs**	✔	✔	✔	✔	✔	✔	✔	✔	✔
	NNSs	✔	✔	✔	✔	✔	✔	✔	✔	✔
	Thai	✔	✔	✖	✖	✔	✔	✔	✔	✔

The sounds in this word were pronounced similarly in all standard pronunciation references. As for Thai English, the sounds that was pronounced differently was the omission of median syllable and lack of final audible consonant released.

This was the only one word that was failed to be intelligible by Thai participants only and was not found to be problematic by the other participant group. When looking at their transcription, it can be seen that Thai participants perceived every sound in the syllable accurately except for one syllable [nə] that was indeed mispronounced by the speaker. However, it should be noted that cinematic can be considered a technical term that is not commonly found. Therefore, although the mispronounced feature found was at one median syllable only, Thai participants failed to transcribed the word correctly which implied their lack of prediction ability of the word which is technical rather than failure in recognizing the sound in this word.

Non-standard sound features causing intelligibility failure.

-        The pronunciation on schwa [ə] as close front vowel [e]

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