How Thai University Learners Perceive English and Thai Consonant Clusters

This study aims to see how Thai EFL learners perceive the consonant clusters in their L1 (Thai) and L2 (English); and to identify to what extent the other possible effects of L2 acquisition of consonant clusters, such as English exposure, influence the perception of L2 learners. In the literature, English has a more complex system of consonant clusters and all positions (initial and final) such as /str-/ in "string" and /-kst/ in "next" (Ladefoged, 2001). Thai, on the other hand, has only initial clusters consisting of only two consonants, e.g., clusters /pl-/ in the word /plaa/ "fish" [19]. This perceptual study involved 50 English words and 50 Thai words, which were selected and read by a native English speaker and a native Thai speaker. All of the words were digitally recorded in the Praat program. Forty Thai EFL listeners, 20 Thai and 20 English major students, were asked to listen to the recorded tokens and identify the words with the clusters they heard. The results showed that there were two factors affecting the Thai EFL learners’ perception of the English and Thai clusters: the language factors and the learner factors. First, regarding the language factors, the listeners had difficulties in perceiving English final clusters. Besides, it was found that the perception of the English clusters by the Thai students reflected the following phonological processes: cluster simplification for the students with low English proficiency; and consonant insertion (hypercorrection) for the students with high English proficiency. Second, concerning the learner factors, the major of study had an effect on their perception of English clusters and both the Thai major students and most English major students perceived English clusters.

Keywords: Consonant; Cluster; English; Thai; Perception
1. Introduction

One of the most important skills in communication of second language learners (L2 learners) is the listening skill. From the literature review [12], [16], [24], listening is necessary and considered as the most significant skill for communication. In addition, listening is needed for speaking because comprehension listening comes prior to speaking. Regarding Nunan’s research [20], L2 learners attempt to acquire listening and speaking competence as primary goals of studying the language. Once L2 learners can communicate in English, they would have better opportunities for their education and careers. From the literature above, amongst the four skills, listening is the first skill that students use to perceive English sounds. Thus, the perception is essential for communication, specifically perception of non-native speakers. Previous studies Best [1], [5] have discussed the perception of second language learners (L2 learners) or foreign language learners (FL learners) as an important issue in the field of SLA (Second Language Acquisition). Similarly, in Cohen [4], the perception is explained in one of the six areas in SLA or SLT (Second Language Acquisition or Second Language Teaching), those are comprehensive inputs, the focus of form, correction of speaking errors, pronunciation, speech act sets, learning strategies, and factors influencing language learners. Cohen [4] argued that second language (L2) learners can develop their language skills through comprehensive inputs when the inputs are more comprehensible, and the L2 learners can produce the language when their pronunciation is comprehensible, grammatically correct, and situational appropriate. In sum, L2 learners’ perception of English has an impact on their production of the language.

For L2 learners to acquire English-speaking competence, they need to be able to perceive the English sound system, which may be different from their first language (L1). According to Tarone [35], the knowledge of both “language units” and “articulatory units” should be involved in English language teaching and learning. Kozhevnikov and Christovich’ theory (cited in [35]) showed that universally articulatory syllable consists of a consonant and a vowel (CV), while Tarone argued that actually English has a structure with initial consonant clusters CCV or CCCV, that is unnatural for L2 learners with less complex consonant clusters in their L1 (first language) to insert a schwa between consonants to make it fit the CV structure.

Similarly, Richards [24] discussed the differences of the L1 and L2 sound systems. L2 learners have difficulty to distinguish L1 and L2 sounds or FL that are still causing the problems of L2 learners’ communication. Burley-Alen (1995, cited [24]) pointed out that “the average time spent on basic skills during the daily communication process is 35 percent for speaking, 16 percent for reading, 9 percent for writing, and 40 percent for listening”. This implies that listening skill can be considered as the most salient skill. Therefore, the knowledge of phonological is needed for L2 learners in order to help them acquire different sound systems. According to Richards [24], phonological knowledge is needed in listening comprehension to be able to divide the message into its component sounds. In acquiring the L2/FL phonology, L2 learners need to learn both single and geminate segments, as well as its prosody.

Previous studies [9], [23] claim that, amongst the combination of sounds, “clusters” seem to be problematic for L2/FL learners, if they do not appear in the L1 system. It is commonly known that the phonemes in any language are not exactly the same as another language. Thus, L2 learners need to acquire a new set of phonemes. L2 learners’ acquisition of a phonemic set becomes problematic. The major problem is that L2 learners tend to assimilate the L2 phonemes to their established L1 system. This affects not only their production of L2 but also the perception of it. Therefore, the main aim of this study is to see how Thai EFL learners would perceive the consonant clusters found in their L1 (Thai) and L2 (English).

1. Differences and similarities between Thai and English

1.1 The English consonantal system and clusters

In the literature, there are 25 consonant phonemes in English [16]. The 24 usual consonants (except for r) occur in the three positions in one word: at the beginning, the middle, and the end of the word [27]. Regarding the structure of English words, a single word consists of English consonants and vowels. According to the English consonant clusters, previous studies [16], [26], [35] discussed the English consonant system that the cluster in English consists of the first consonant of the word (C1), the second consonant of the

Page : 9
word (C_2), and the vowel (V). Amongst all of these phonemes, it appears that 21 consonants can form consonant clusters (C_1C_2C_3); whereas, the following consonants /p, b, t, d, k, g, f, θ, ð, s, ŋ, w, r, and l/ can be C_1, the following consonants /m, n, p, b, t, d, k, g, f, s, z, ʒ, v, j, w, r, and l/ can be C_2, and the following consonants /r, l, w, t, and s/ can be C_3.

1.2 The Thai consonantal system and clusters

In the Thai consonantal system, there are 21 consonant phonemes. There are only nine final consonants: /p, t, k, m, n, l, w, r, and l/, which are available in Thai pronunciation. Regarding the structure of Thai words, a single word is consisted of Thai consonants and vowels [19], [28], [36].

Amongst all of these phonemes, it appears that eight consonants can form consonant clusters (C1C2); whereas the following consonants /p, ph, t, k, and kh/ can be C1, and the following consonants /w, r, and l/ can be C2, in consonant clusters. Moreover, from the literature, Thai words can be found in a combination of multiple consonant letters or Thai consonant clusters. In Thai, there are 11 possible consonant clusters in the initial position [19].

From Section 2.1 and 2.2, it can be seen that the cluster structures of the English and Thai language are different. The Thai cluster structure is simpler than the one of English. In general, the English cluster structure can consist of as many as three onset segments and four coda segments such as the sound /str-/ in the word "string" and the sound /-kst/ in the word "next" [16], while the Thai cluster structure has up to two onset segments and only one coda segment such as the sound /pl-/ in the word /plaa/ ‘fish’ (Naksakul 1999). This can imply that the differences of the consonant clusters systems in English and Thai can cause difficulties for Thai EFL learners’ pronunciation.

2. Problems in the cluster perception in different L1s

2.1 Problems in the initial cluster perception

There are studies on the speech perception and the perception of ambiguous sound combinations, which assume to reflect the role of phonotactic knowledge in perception. Halle, Segui, Frauenfelder & Meunier [9]; and Pitt [23] studies investigate the perception of the liquid consonants, which is the second consonant in a C_1C_2 cluster structure, such as /l/ and /r/. The clusters are formed in the initial position of the clusters are called a phonotactically legal word- initial cluster in English (e.g., [tr.], [sl.]). For instance, the /l/ sound was identified as frequently as the /r/ sound when preceded by /l/, but less often than the /r/ sound when preceded by /s/. On the other hand, the /r/ sound was heard as /l/ when preceded by /s/, but as /r/ when preceded by /l/.

Moreover, other research also confirmed that it is most effective to treat initial two-element clusters to affect change in child’s sound system particularly, if the child has the first and second consonants in his or her system already. For example, if a child is taught /pl-//, then he or she should already have /p/ and /l/ in his or her collection of words. This change of sound system would not have any achievement, if there is no phonemic collection in the child’s sound system [6]. Furthermore, the research of Hall’e et al. [9] showed the L2 learners’ misperception of consonant clusters. The participants of the study who are French listeners were asked to listen the words, which beginning with the sounds of /dl-/ and /tl-/.

Then, they were asked to identify the words they heard by writing down in the given papers. The results show that over 85% of the participants’ responses are the velar stop /k/- instead of the obtained words.

Similarly, Best [1] followed the findings of Hall’e et al. [9] by extending the basic experiment to two other groups (Hebrew speakers and American English speakers) in order to examine whether the perceptual difficulties of French speakers with /dl, tl/. The results of the study showed that there are two interesting points. The first, Hebrew speakers, whose L1 sound system has all of /dl, tl, gl, kl/ clusters, did not have difficulty with this type of clusters. In contrast, the second, American English speakers, whose L1 differ from French, though that they had difficulty with the /dl-/ and /gl-/ difference. These results were the evidence for the perception of language-specific phonotactic with the language-specific phonetic contributions.

Similarly, Sheldon and Strange [29] found that Japanese learners’ perception of the English liquid difference was problematic with initial consonant clusters, but in the final consonant clusters. In general, Japanese learners are better at perception and production of word-final liquid than word-initial liquid difference. In fact, English /r/ and /l/ do not differ in the way that they
are adapted into Japanese in initial position, but they do differ in final position. This implies that a position-sensitive related to L1 sounds system is the cause of accuracy of L2 learners’ perception and production.

2.2 Phonological processes

The perception of consonant clusters can reflect some phonological processes. Thus, this section reviews literature on phonological processes, as seen below.

The phonological processes of consonant clusters are found in Bowen [2]; Hedge [11]; and Shinohara [30]. The sound errors in phonological processes are normally found in children who are learning to talk. They cannot articulate the complex words clearly. According to Odden [21], phonological processes are patterns of sound errors, which appear in the complex words. The phonological processes may be the five categories: the substitution, the assimilation, the reduplication, the cluster reduction, or the insertion.

First, the substitution process is replacing a sound with another sound that can be divided into more phonology processes such as the stopping, the gliding, the nasalization, and the assimilation processes [11], [21]. For instance, the gliding process is replacing a liquid sound like /r/ or /l/ with a glide sound like /j/ or /w/ such as “lion” /laj’n/ = “yion” /jaj’n/; “rabbit” /raebθ/ = “wabbit” /weabθ/; “look” /lʊk/ = “wook” /wʊk/; “rock” /rʊk/ = “wock” /wʊk/. Another research on phonological processes of substitutions between the consonant clusters is of Kırk [13]. He found that the substitution for stop-liquid clusters in which two elements were produced was the substitution of /l/ for /r/, the consonant clusters, and the gliding of /r/. This process occurs when a stop is replaced with a fricative sound followed by the liquid and this is called an assimilatory process. This substitution is caused by articulatory confusion between liquids.

Second, the assimilation process is a process of a sound becomes more like another sound (the similar sound) by taking other sound’s features: voicing, place of articulation, and manner of articulation. This process is sometimes called a consonant harmony or a vowel harmony. Menn [17] proposed that there is a strength hierarchy that decides the direction of assimilation, in which weaker consonants become to stronger ones. From the strongest position to weakest, there are velar, labial, dental. For example, the sounds “bed” [bɛd] = bet [bɛt]; and “big” [bɪɡ] = bik [bɪk].

Third, the process of reduplication occurs in a multi-syllabic word; in which the initial CV syllable is repeated. This process occurs quite early in simplified children’s speech and is often lost by the time the stage under discussion begins [31]. For example, the words ‘cookie’ = [gege]; ‘TV’ = [did]; and ‘water’ = [wawa].

Fourth, the process of clusters reduction (cluster simplification) or sometimes-called the deletion of unstressed syllables usually occurs in the word with more than one sound, and includes a vowel-like sound if it is unstressed [21]. For example, the words are “away” /əwej/ = “way” /wej/; “banana” /baθənə/ = “nana” /nænə/; and “butterfly” /bʌtθAIjI/ = “butterfly” /bʌtθAIjI/. They may simplify consonant clusters to a single consonant, e.g. “pane” for “plane” [37]. The word ‘pane’ is the example of the phonological processes of the cluster simplification.

Fifth, on the contrary, there is the phonology processes of consonantal insertion or the hypercorrection process. According to Labov [14], the term hypercorrection is a technical term that has been engaged widely in the studies of language variation and linguistic change to explain the linguistic form of the errors in speech production. The hypercorrection involves the awareness of L2 speakers. The group of a high English competence tends to have more varieties of performance in an ‘incorrect’ form by adding more sounds. For instance, they add the sound-like American final ‘-'r' in the non /-'r/ word ex. ‘American’ for ‘America’.

All phonological processes can occur in L2 learners’ perceptions of English consonant clusters. For example, Stemberger&Treiman’s study [32], reported the internal structure of word-initial consonant clusters by investigating speech errors that involved two-consonant clusters. They required the data from the corpus of 7,220 problems that the first author has collected from a natural speech over a 5-year period. In this study, the loss, the addition, and the replacement difficulties are examined by observing the errors that occur spontaneously in the speech of normal adult native speakers of English. The findings reported that clusters must contain two distinct types of syllable positions: a C₁ position (also found with singleton consonants) and a C₂ position (found only in clusters). The first member of a cluster is less likely to be lost, added, or mispronounced than the second member of the
cluster. In addition, the first member of the cluster is more similar to a singleton consonant than the second member. This study shows that types of segments are less important than the position of the segments.

From the previous literature, the initial consonant clusters (CC-) with C₂ of /r/ and /l/ seem to be the major problem for L2 learners. Therefore, the aim of his study is to investigate how initial consonant clusters (CC-) with C₂ of /r/ and /l/ are perceived by Thai EFL learners in their first language (L1) and English (L2). Two-initial consonant clusters (CC-) are selected to explore L2 perception.

2. Purpose of the Study

2.1 To see how Thai EFL learners would perceive the consonant clusters found in their L1 (Thai) and L2 (English).

3. Research Methodology

3.1 Participants

There were 40 male and female Thai EFL undergraduate learners, who were majoring in Thai and English, voluntarily participated in this present study. They were divided into four groups: 20 students from Thai major (10 freshmen and 10 seniors); and another 20 students from English major (10 freshmen and 10 seniors).

3.2 Preparing tokens

There were two sets of tokens in this study: English consonant clusters and Thai consonant clusters. The words were proportionally selected for this perceptual study. The words contained all types of Thai consonant clusters [3], [19] and the English words had initial and final English consonant clusters with the second consonant as /r/ and /l/ [16]. (1) There were 50 English tokens from the original 150 words (104 clusters and 46 non-clusters) spoken by a native–American English speaker.

(2) There were 50 Thai tokens from the original 150 words (90 clusters and 60 non-clusters) spoken by a native–Thai English speaker.

3.3 Procedure

All of the 40 Thai EFL listeners were asked to listen to the recorded tokens by a native–English and Thai speaker, in a randomized order. They were asked to give their answers in answer sheets. There were 150 words in English and 140 words in Thai. The listeners were allowed to read the word lists in each section, before the listening started and had a pretest of five items in order to enable them to understand how to do the test. The listeners were asked to identify the word they hear and circle the correct word after listening to each token. They listened to each token twice, based on Mohanan’s [18] method of non-native varieties of language. All the answers were entered in the Excel Program. For example, the listeners listened to the word “pay” as the original English tokens and then chose one answer from the following three choices.

(1) a. pay b. play c. pray.

In Thai token, the listeners listened the original English tokens is the word “ผนัง /แอลำ:/”. The listener chose one answer from the following three choices.

(2) a. ผนัง /แอลำ:/ b. ผนัง /แอลำ:/ c. ผนัง /แอลำ:/

3.4 Statistical analysis

From the procedures of data collections, statistical methods were used to analyze the data in this study. The descriptive and inferential methods were used through SPSS program (Statistical Package for Social Science), a computer software program for Microsoft Window.

4. Results

The results are divided into two main sections, as follows.

4.1 Language factors

○ Phonological Processes

In this study, amongst all the phonological processes, it was found from the results that the perceptions of the Thai EFL learners on Thai and English clusters reflected three main phonology processes. The first one was the consonant simplification (CC > C). The second one was consonant cluster substitution (C₁ . C₂) and the third one was the consonant hypercorrection (C > C). The participants perceived Thai consonant clusters in all types of the phonological processes.

The result showed the errors of the Thai EFL listeners’ perceptions of Thai consonant clusters. The most of errors (8 out of 12 items) of Thai clusters were consonant substitution (C₁ . C₂) between /l/ and /r/ sound (83.33%). There were three items (25%) of errors in Thai consonant hypercorrection (C > C) and there was
one item (8.33%) of consonant simplification (CC > C). There is no different between TH and ENG groups in perception of Thai consonant clusters. This table showed that the Thai consonant clusters did not seem to be the problem for the Thai EFL listeners.

- **Positions of the Clusters**
- **Learner factors**
  - **Major**
  - **Year of the study**
  - **Gender**

## 5. Discussion and conclusion

From the results of the study, there are two main interesting points that can be concluded, as follows.

Firstly, regarding the language factors, it was found that the perception of the English clusters by the Thai students reflected the following phonological processes: the cluster simplification for the students with low English proficiency; cluster substitution for the students with average English proficiency; and consonant insertion (hypercorrection) for the students with high English proficiency.

Secondly, concerning the learners’ factors, the majors of study had an effect on their perception in English clusters. The result of this study shows that there is no difference between English-major and Thai-major students in acquiring Thai consonant clusters. The students from the English and Thai majors can basically perceive Thai tokens at a higher rate. On the other hand, the English-major students can perceive English tokens better than Thai-major students. Interestingly, genders (male and female) and years (freshman and senior) do not seem to be the major effects on their proficiency in perceiving English and Thai consonant clusters. Importantly, two majors have significant impact on their score of English tokens.

For recommendations for further studies, this study may shed light on other studies in EFL speech pronunciation and perception. Furthermore, there were limitations on this study. From the results of the perceptual study, the recommendations are as follows:

- First, there were only ten students for each group: ENG1, ENG4, TH1, and TH4 participating in this perceptual study. It is entirely possible that with more participants from other majors or other years that there might be different results.

Second, besides the participants majoring in English and Thai language, it is recommended that further studies can be carried out in other academic fields by expanding and further developing the methodology by adding additional instruments.

Third, other groups of participants can be conducted in further studies. For example, students from the fields of science majors or other years can be investigated of both perception and production.

As English has more complex consonantal system, Thai EFL learners may have difficulties in acquiring English consonant clusters. This study shows the Thai EFL learners’ perception of L1 (Thai) and L2 (English) in different ways. The Thai EFL learners can perceive Thai consonant clusters, their L1 sound system at a high rate than English consonant clusters, L2 sounds. Moreover, a group of students from English major, particularly the ENG4 can perceived English consonant clusters (initial and final position) better than a group of students from Thai major, particularly the ENG4. In contrary, all groups of students can perceive Thai consonant clusters at a higher rate. Therefore, this perceptual study would yield the leading data of English and Thai consonant clusters. In addition, English consonant clusters should be emphasized in ELT among Thai EFL learners so as to help advance the EFL acquisition in phonetics and phonology.

## 6. References


Pronunciation. Teachers of English to Speakers of Other Languages, Inc. (TESOL) Quarterly. 6(4), 325–331.
