

Prosodies in the Production of Polar and Informative Questions by Thai Native Speakers

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ABSTRACT

This study aims to investigate how Thai native speakers, whose native language utilizes pitch to indicate lexical differences, produce English intonation and examine whether a prosodic transfer of L1 occurs in the L2 production in case of polar questions and informative questions. Despite its crucial role in communication and language learning, many English language learners have difficulty using appropriate intonation. The research was conducted by recording twenty Thai natives (undergraduate students) and three English natives speaking five polar and five informative questions in three speech rates (slow, natural, and fast). The record was analyzed by PRAAT. The result showed that Thai natives could accurately produce the English intonation in the natural speech rate. Furthermore, the speech rates did not significantly affect the pitch change. However, interference from L1 also occurred in some participants. For example, some production was monotonous. Otherwise, some produced low intonation at the end of polar questions. In contrast, some produced high intonation at the end of informative questions. These phenomena of the inconsistency of intonation explicitly occurred when speech rates changed.

Keywords: Prosodies, English intonation, Polar question, Informative question, Thai natives, L1 interference

1.BACKGROUND

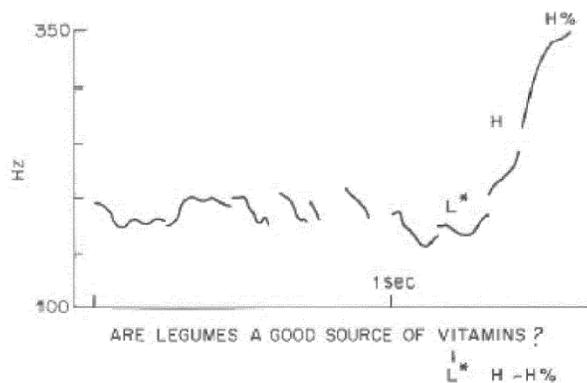
For decades, one of the most popular ideas in second language acquisition literature has been the idea of L1 transfer or interference, which is the principal barrier to second language acquisition (Stern, 1967; Cook, 1969, 1973; Ervin-Tripp, 1974). Linguists distinguish between the transfer and the interference. Similarities between the two languages cause "positive transfer." Differences cause the "negative transfer," generally known as the "interference" (Krashen, 1981). L1 interference can occur in any field of second language learning as well as problems of pronunciation, intonation, rhythm, and melody or prosody can result from distinct rules between the two languages. Hence, the native language interference or negative transfer is the remarkably influential factor in accounting for the students' pronunciation (Kenworthy, 1987; Lu, 2010). For example, Flege, Frieda, & Nozawa (1997) found in their research that had native English-speaking evaluated short English sentences spoken by two native Italian (NI) groups. The subjects in both NI groups were found to speak English with detectable foreign accents even though they began learning English as children and had spoken English for 34 years on average. In addition, the NI subjects who spoke Italian relatively often had significantly stronger foreign accents than those who seldom spoke Italian. Thus, it appears that the degree of activation of the L1 or the strength of its representations may also influence L2 production accuracy.

English is an intonational language. English places pitch in suprasegmental level instead of segmental level. The pitch in sentences also has some patterns, which are called intonation. The intonation is the pattern or melody of pitch changes in connected speech, especially the sentence's pitch pattern. Intonation adds a great deal to the naturalness of the speech. If people lose the ability to use intonation, it can be complicated to sound natural and sometimes too challenging to understand (Knight, 2012). Intonation has a significant influence on speaking intelligibility and plays a significant role in successful cross-cultural

communication. At the heart of many cross-cultural misunderstandings lie problems associated with English learners' intonation features (Gumperz, Jupp, & Roberts, 1979; Gumperz, 1982). Failure to use the appropriate pragmatic discourse features of English intonation jeopardizes effective communication, possibly resulting in a severe communication breakdown between native speakers (NSs) and non-native speakers (NNSs). Moreover, Pike (1945) stated that unusual intonation makes unnatural English, and indecent melody will add to accent even though speakers have the proper pronunciation of vowels and consonants. Despite its significant role in communication and language learning, many English learners still have difficulty using appropriate intonation. Even after long exposure to the language, a failure to appropriately use the English prosodic features persists even in advanced proficiency (Pickering, 1994, 2004). Derwing et al.(2003) also found that learners who received lessons emphasizing prosody features such as stress and rhythm were judged to be easier to understand than learners who received lessons focused on individual sounds. Even though the learners who were instructed individual sounds were more accurate in their use of those sounds, this did not increase listeners' perception of their speech's intelligibility to others (Lightbown & Spada, 2013). L2 English language learners tend to have problematic pronunciation, mostly even in polar questions that use rises tone and wh-questions that use a falling tone. Moreover, the L1 interference in pronouncing these two basic types of questions are observed in Spanish learners (Backman, 1979), Finnish learners (Toivanen, 2003), Russian learners (Crosby, 2013), Korean learners (MacDonald, 2011), Chinese learners (Lee, 1968), Vietnamese learners (Nhong, 2010), and Thai learners (Wei and Zhou, 2002). This research solely focused on the intonation of polar and informative questions since these two were the apparent problematic intonation patterns found in international learners of English. Polar questions or Yes-no questions express the speakers' presupposed belief towards the propositions or the matters being asked. (Cristo & Hirst, 1998). The unmarked English contour for yes-no questions has a final rise or a rising tone (See example in Figure 1) (Cruttenden, 1997; Pierrehumbert, 1980). Moreover, rising nuclei are commonly used in English conversation to indicate that the listener is expected to conclude what was said and respond (Gut, 2009). Arising tone also serves as the signal that this is a question (Tench, 2011).

Figure 1

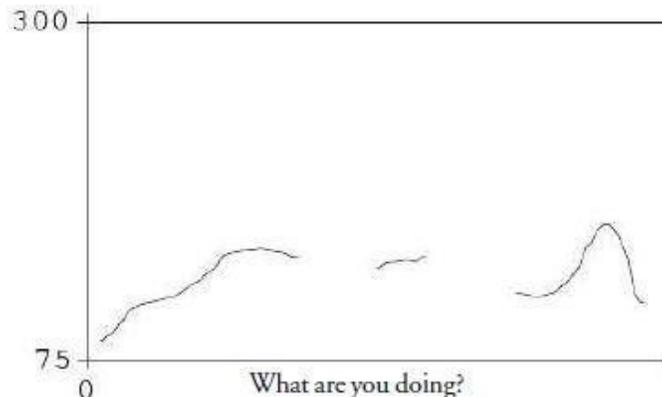
Illustration of an unmarked yes-no question (Pierrehumbert & Hirschberg, 1990).



In contrast to yes-no questions, wh-questions in English, also known as information questions, have the same unmarked falling contour as declarative. Pike (1945) describes the general tendency of question contours to be falling and refers to them as the chief contour. Wh-questions in English have also been described more specifically as having a falling tone or a rising-falling tone (See example in Figure 2) (Couper-Kuhlen, 1996 citing Armstrong & Ward, 1931; Pierrehumbert & Hirshberg, 1990)

Figure 2

Illustration of pitch contour of a wh-question produced by an English speaker reading a sentence in English (Fariás, 2013)



Unlike the English language, intonation is not characterized for differentiating questions and statements in Thai language. Thai language is a tonal language. Pitch contours or tones on single syllables are phonemically innate to words and contribute to their lexical meaning. Thai has five tones; three relatively level or static tones: mid, low, and high, and two relatively kinetic or dynamic tones: falling and rising. Thus, it is difficult for Thai EFL learners to use English intonation properly (Knight, 2012; Roach, 2009). Thai learners have to acquire an entirely new phonological system with a whole range of new phonological rules (Gut, 2009). Furthermore, different pitch function levels in English are parts of the whole sentences' intonation contours. An intonation contour in English may be distributed over an utterance containing only one syllable or over an utterance consisting of many words. While Thai sentences also exhibit different overall intonation patterns, such patterns do not play the dominant role in English. Other elements, such as tones and final particles, are so prominent in Thai speech that they dominate and modify the generalized tendencies towards specific overall intonation patterns. Final particles have often been claimed to function similarly to intonation in non-tonal languages such as English (Chan, 2001). It raises a number of questions about the tonal properties of these particles and their relationships to intonation. Earlier work (Chuenkongchoo, 1956; Cooke, 1989) has shown that some final particles in Thai have a "falling tone" when they occur in statements and "high tone" when they occur in the questions. For instance, the "unrestrained" status particle /wa/ are realized as [wá] in yes-no interrogative sentences and [wâ] in declarative sentences, as shown below.

- a. [nó:j mā: mûə̀rə̀j wá] Noi come when FP 'When did Noi come?' (/wa/ = 'UNRESTRAINED')
- b. [nó:j mā: mûə̀yēn wâ] Noi come in-the-evening FP 'Noi came in the evening.' (/wa/ = 'UNRESTRAINED')

The influence of final particles interfere with the English intonation production of Thai learners; for instance, some sentence particles make the falling tone in Thai polar questions while polar questions in the English language have a rising tone (Rudaravanija, 1965). Rudaravanija (1965) investigated thirty hours of informal conversations recorded among Thai students in New York City. The result showed that L1 and L2 differences caused some difficulty for Thai EFL learners due to their native language (L1). Specifically, the findings revealed that the final intonation of Thai sentences depends on the sentence particles, which some tones do not conform to the English intonation patterns. For example, some sentence particles make the falling tone in Thai polar questions while polar questions in English have a rising tone. Moreover, Wei and Zhou (2002) reviewed research in the Thai context. They found that Thai students used rising tones for both Yes-No questions and Wh-questions. Moreover, the tones used in the Yes-No questions and statements are the same as a falling tone. On the contrary, a question beginning

with Wh-words is often heard to fall at the end, but the students will most probably make them like what yes-no questions should be instead. Moreover, Thai EFL learners tend to pay more attention to vocabulary and grammar and use a flat tone with little change in pitch, which leads to misused intonation and lack of emotion to express the situation (Lado, 1989, as cited in Young, 2019). Therefore, according to the prior research, it can be said that the obstacle in attaining native pronunciation might be caused by the difference in prosody systems of both languages. English polar and informative questions are problematic for international learners especially Thai learners. However, there is little research investigating the English Intonation production characteristics of Thai learners. Most English intonation research in the Thai context focuses on English intonation training (e.g., Chomphuboot, 2005; Yangklang, 2013; Sawaengmongkon, 2014). To gain more insight data of the production characteristics of Thai native speakers, it is needed to conduct an acoustical analysis on Thai learners' production of English polar and informative questions.

This study aims to investigate how Thai native speakers, whose native language utilizes pitch to indicate lexical differences, produce English intonation and also to examine whether a prosodic transfer of L1 occurs in the L2 production in case of polar questions and informative questions. It is hoped that this study will raise awareness of teaching and learning English intonation in two grammatical function patterns; polar questions and informative questions.

3. METHODOLOGY

3.1 Participants

Three English native speakers (one female, two male) were used to make a model sound (n=3). The target group was twenty (seventeen female, three male) Thai undergraduate students (n=20). The mean length of studying English is 14.65 years (range: 12-18 years). They first encountered the English language averagely at 5.25 years old (range: 3-9 years old). Outside the classroom, the participants were contacted with the English language 6.5 hours per week (range: 0-21 hours per week). All participants' native language is Thai. Only one participant did not make sure whether he/she had an English native speaker in the family. The rest did not have any English native in their family.

3.2 Experimental design and instruments

This research focuses on two patterns of intonation: yes-no questions and wh-questions production. In this task, the participants asked ten questions prepared, five questions each for yes-no questions and wh-questions. The sentences were presented in a script that participants understood the content of the conversations. There were two scripts with the same patterns of structure. Participants were able to be familiar with the task in the first script. Then, only the record spoken in the last scripts was used in the analyses and can repeat each sentence to the best of their ability (Trofimovich & Baker, 2007; Fujimori et al., 2016). The warm-up stimuli and test stimuli are adapted from Nguyễn & Đào (2018). This study has adopted the structure of yes-no questions and wh-questions and changed only the content words. The warm-up stimuli and test stimuli also differ by the change of noun. However, the structures are the same. The stimuli were listed as 1-5 (polar questions) and 6-7 (informative questions). Polar questions in this research each varied the question word as well as the informative questions. The question words chosen are "Are", "Do", "Can", "Did", "Have", "Who", "What", "When", "Why" and "How". The stimuli used in this study are presented in APPENDIX.

3.3 Procedures

After filling the questionnaire and form, each participant was led to the recording studio at Mahidol University. Participants took part in the recording individually. After a detailed explanation of the task was given to the participants, the recording began with a practice session, followed by the main session. Participants recorded all stimuli. The stimuli were written in scripts made of hard paper. There are two scripts prepared. The first script is the practice script to familiarize the participants with the task. Then, the record used in this study is the record of the second script. The participants can repeat any sentence to their best capacity. Both warm-up and main record stimuli must be spoken at different speaking rates—slow, normal, and fast. They were asked to speak at a slow rate first and then built up their speed gradually. The whole record process took around thirty minutes per person.

4. RESULT

4.1 Tone alignment characteristics of polar questions production

To examine how the tone alignment of the polar questions of the participants, the maximum pitch and the minimum pitch (Hertz) of the final syllable of the polar questions in normal speed were analyzed. The results of the high tone alignment by the Thai natives and English natives are presented in Figure 3 and Figure 4.

Figure 3

The high tone alignment pattern of polar questions

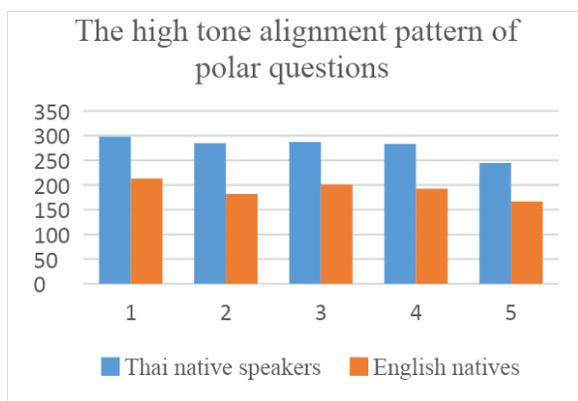
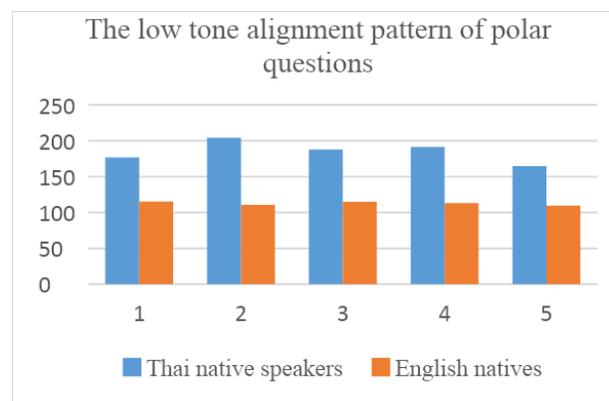


Figure 4

The low tone alignment pattern of polar questions



The analysis yielded a significant contrasts ($F=5.69$, $p=0.019$), demonstrating that in the production of the high tone in normal speed of the Thai natives. High tone production in the polar question of the Thai native speakers statistically differ from the English native speakers. In addition, the low tone production showed significant contrasts ($F=18.04$, $p=0.00$). Thus, low tone production in the polar question of the Thai native speakers statistically differs from the English natives.

4.2 Tone alignment characteristics of informative questions production

The maximum pitch and the minimum pitch (Hertz) of the final syllable of the informative questions, speaking in normal speed were analyzed. The results of the high tone alignment by the Thai natives and English natives are presented in Figure 5 and Figure 6.

Figure 5
The high tone alignment pattern
of informative questions

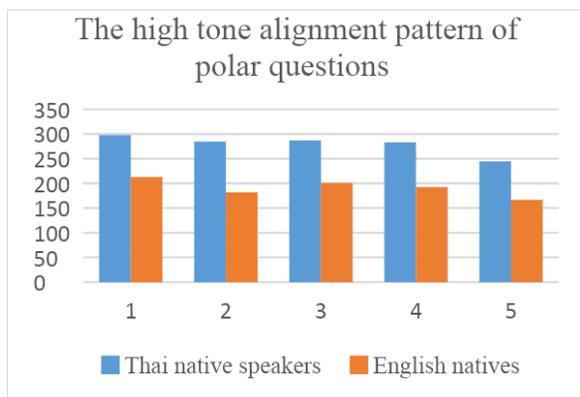
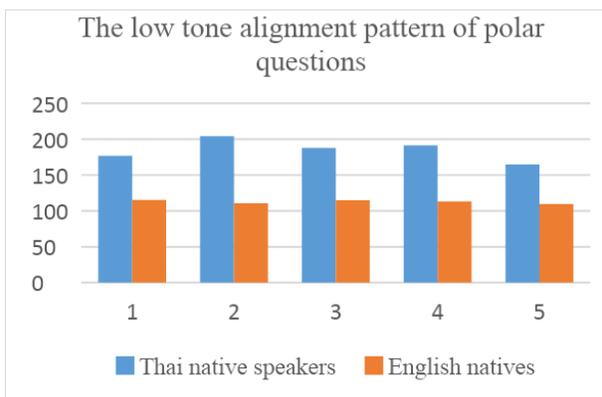


Figure 6
The low tone alignment pattern
of informative questions



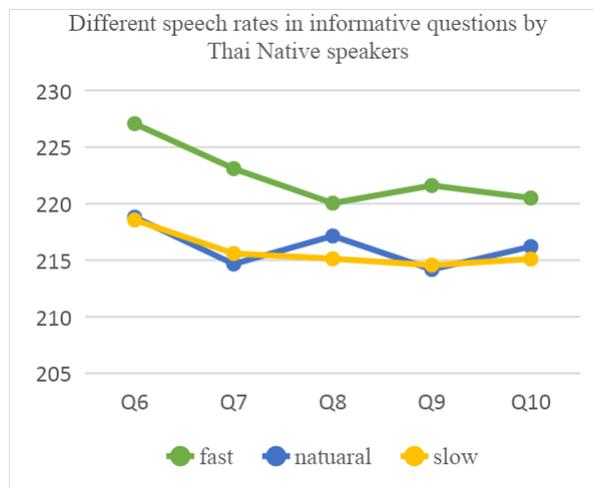
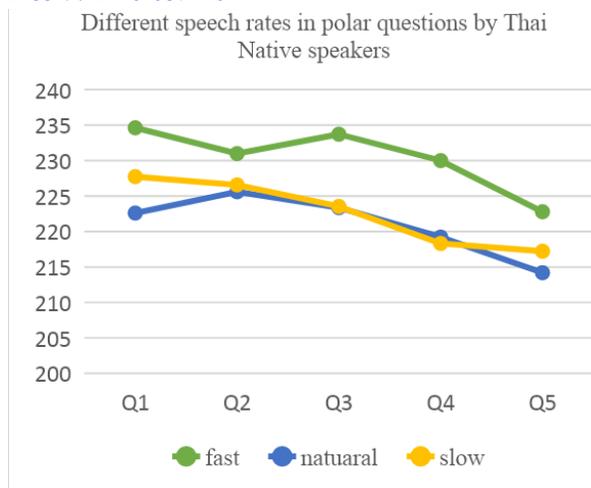
T-Test was performed on the mean scores and yielded non-significant contrasts ($F=0.24$, $p=6.22$) in the high tone alignment of the informative questions. Thus, the high tone production of the Thai native speakers did not statistically differ from the English natives. In contrast, the low tone production showed a significant difference ($F=20.54$, $p=0.00$). Thus, low tone production in the polar question of the Thai native speakers statistically differs from the English natives.

4.3 Speech Rate Effect on Pitch Change

In order to successfully determine and get a clearer picture of whether the speech rates are the factor in changing pitch, the data was derived from the average pitch of the whole sentence. In addition, the average pitches of each speech rate (fast, normal, and slow) by the participants were compared between speech rates using One-Way ANOVA to observe the pitch change by the effect of speech rates. The results of speech rate affecting the pitch production by the Thai natives and English natives are presented in Figure 7 and Figure 8.

Figure 7
Different speech rates in polar questions
by Thai Native speakers

Figure 8
Different speech rates in polar questions
by Thai Native speakers



One-way ANOVA was performed on their mean scores and revealed no statistically significant difference in both the polar questions ($F=1.10$, $p=0.335$) and informative questions ($F=0.67$, $p=0.513$). This indicates that the test scores of the two student groups were not significantly different in their word stress assignment.

4.4 Pitch Contour Analysis

The pitch contours of each record were illustrated as a pitch contour graph. The insight analysis from the pitch contour graph found two interesting phenomena. The monotonous pronunciation (See comparison example in Figure 9 and Figure 10) and the pitch pattern mistake (See comparison example in Figure 11 and Figure 12) occurred in Thai native speakers' pronunciation of both polar questions and informative. In the normal speed pronunciation, the monotonous pronunciation is 15% of all normal speed records. It can be divided into 40% into polar questions and 60% in informative questions. The wrong pattern mistake appeared in 30.50% of all normal records. 49.18% occurs in polar questions, and 50.82% occurs in informative questions.

Figure 9
 Monotonous pronunciation
 (English native speakers)

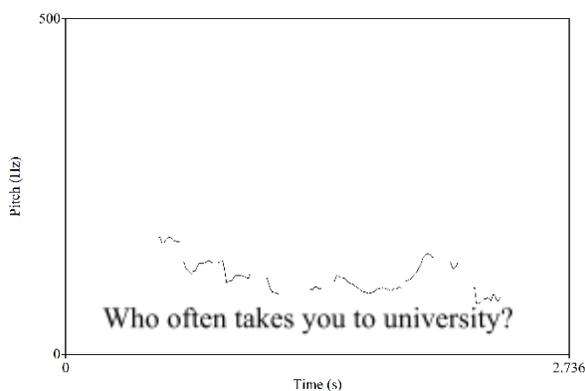


Figure 10
 Monotonous pronunciation
 (Thai native speakers)

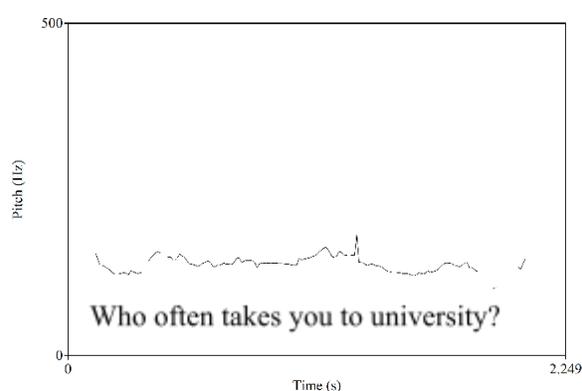
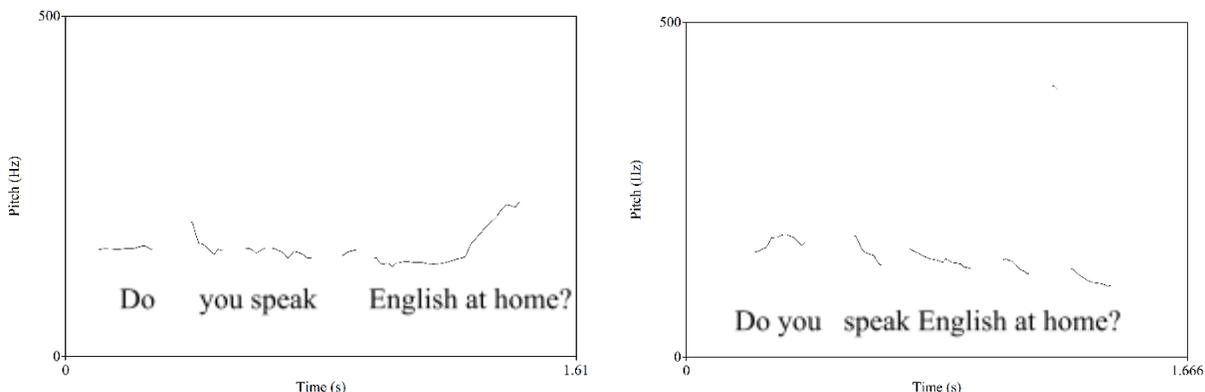


Figure 11
 Pitch Pattern Mistakes
 (English native speakers)

Figure 12
 Pitch Pattern Mistakes
 (Thai native speakers)



Moreover, the mistakes in the three speech rates are summarized. In the insight analysis, the speech rates became the factors of pitch pattern mistake, which is 73.3% of all records ($n=600$). Thai native speakers made mistakes the most in the fast speed (36.82%) of all mistakes. The second is the normal speed (32.73%), and the last is a slow speed (30.45%). In addition, the results divided by the question types showed that Thai native participants made mistakes in informative questions (56.82%) more than the polar questions (43.18%). The detailed analysis in each sentence pattern found that the mistakes that occur the most in polar questions are the polar questions beginning with “Can” (25.26%) and “Have” (25.26%). At the same time, the most mistakes in informative questions are the informative questions beginning with “What” (31.2%).

5. DISCUSSION, LIMITATIONS, AND FUTURE DIRECTION

This study aims to analyze the tone alignment characteristics of Thai native speakers to draw insightful information. The results obtained from this study suggest that Thai learners of English need to be paid more attention to the importance of intonation pronunciation features. The statistical result of the informative questions presented that Thai native speakers did not differ from the English native speakers in a high tone. However, the high tone in the polar questions is statistically different. Moreover, Thai natives had a significantly different low tone from the English natives, both polar and informative questions. Furthermore, the polar question is related to the high tone at the end of the question, while the informative question is related to the low tone. This result supports Thai native speakers’ pitch pattern mistakes in informative questions more than in polar questions. The pitch contour analysis from the graph also supports the idea of Wei and Zhou (2002) that Thai native speakers have the problem in pronouncing polar and informative questions.

In addition, the monotonous pronunciation is an unexpected aspect that the Thai native speakers should be aware of. This is the result of L1 interference. Thai tones became the factors that caused the monotonous pronunciation (Lado, 1989, as cited in Young, 2019). Thai tones often appear with the tone indicators, or the tone rule fixes them in the Thai language. Thus, when Thai native speakers speak or pronounce the questions or sentences in English, which does not have the tone indicator, the monotone tends to appear like what happened in this study. It is an essential factor that English teachers should be aware of. Raising awareness or teaching this aspect in the classroom might solve the monotonous pronunciation of Thai native speakers.

The current study is basic scientific research on sound production. The result provides scientific evidence on L2 speech. It raises awareness of teaching and learning English Intonation in two grammatical function

patterns; polar questions and informative questions. The current study results can shed light on some practical suggestions and implications on teaching and learning pronunciation.

The limitation of this study is the number of the reference group. This study was conducted in Thailand when there was a Coronavirus spreading in Bangkok. Thus, the number of English natives had to change. Initially, the English natives expected in this study are five people. However, due to the new COVID-19 wave, recording in the studio was impossible. Therefore, the number of English natives had to be diminished to three people. According to a small number, the data analysis might not be significant in some aspects. Therefore, the number of participants should be increased to make the data analysis more significant for future studies.

Moreover, an interesting detailed analysis was found in this study about the pattern that participants made mistakes the most. Since the stimuli questions were chosen in various patterns or question words, see the example in APPENDIX. However, the main focus of this study did not pay attention to which specific question words will cause the mistake the most. Thus, the result is broadly summarized. A more specific analysis about whether the question words affect the Thai natives' pronunciation should be investigated in the future.

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<https://dannyyoung.weebly.com/cross-cultural-languagedevelopment/remedying-english-pronunciation-problems-in-thailand>

APPENDIX

Table 1
Warm-up and main record stimuli for polar questions

Warm-up Session	Record Session
1. Are you a teacher?	1. Are you a student?
2. Do you speak German at school?	2. Do you speak English at home?
3. Can you play basketball?	3. Can you play tennis?
4. Did you watch Netflix last night?	4. Did you watch TV last night?
5. Have you been to Japan yet?	5. Have you been to America yet?

Table 2
Warm-up and main record stimuli for informative questions

Warm-up session	Record session
6. Who often takes you to school?	6. Who often takes you to university?
7. What do you often do on Sunday?	7. What do you often do on Friday night?
8. When will you graduate from high school?	8. When will you graduate from university?
9. Why do you like to learn Vietnamese?	9. Why do you like to learn English?
10. How long have you been in America?	10. How long have you been in Thailand?