

## An Investigation into Pronunciation Deviations in German Final Sounds among Thai YouTubers Teaching German Through YouTube

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This research study aims to examine and corroborate the hypothesis that Thai individuals encounter difficulties in accurately pronouncing certain German final consonants, particularly clusters, due to the distinct phonological functions associated with these sounds. The investigation will delve into the linguistic and phonetic aspects of both languages to explore potential underlying factors influencing this phenomenon. A comparative analysis of Thai and German phonological systems will be conducted, focusing on final consonant articulation, phonetic rules, and language-specific phonotactic constraints. The outcomes of this study enhance our comprehension of cross-linguistic speech production difficulties, revealing that Thai individuals learning German encounter challenges with specific German final sounds due to variations in the phonotactic patterns of final consonants. The finding shows that some final consonant sounds are pronounced accurately, while others, like /t<sup>h</sup>, k<sup>h</sup>, n, f, s, ç, x, l, st<sup>h</sup>, nt<sup>h</sup>, çt<sup>h</sup>, xt<sup>h</sup>, tʃ/, are problematic due to differences between Thai and German phonetics.

### Research Article

### Abstract

### Keywords

final sound;  
German;  
interference;  
interlanguage;  
pronunciation

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## การตรวจสอบความเบี่ยงเบนของการออกเสียงตัวสะกด ของภาษาเยอรมันใน YouTubers ชาวไทยที่สอน ภาษาเยอรมันผ่าน YouTube

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บทความวิจัยฉบับนี้มีวัตถุประสงค์เพื่อตรวจสอบและยืนยันสมมติฐานที่ว่า คนไทยประสบปัญหาในการออกเสียงพยัญชนะท้ายในภาษาเยอรมันให้ถูกต้องตามหลักภาษาเยอรมันเนื่องจากเกิดการแทรกแซงจากภาษาแม่ โดยเฉพาะตัวสะกดที่มีลักษณะเป็นเสียงควบกล้ำซึ่งไม่ปรากฏในภาษาไทย ในการวิจัยนี้จะนำเสนอทฤษฎีทางภาษาศาสตร์และสัทอักษรจากทั้งสองภาษาเพื่อทำการวิเคราะห์และสำรวจปัจจัยพื้นฐานที่อาจส่งผลต่อปัญหานี้ ซึ่งจะเปรียบเทียบระบบเสียงภาษาไทยและภาษาเยอรมัน โดยเน้นไปที่การออกเสียงพยัญชนะท้าย รวมถึงระบบเสียง กฎการออกเสียง และข้อจำกัดที่เกี่ยวข้องกับการออกเสียงเฉพาะในแต่ละภาษา จากการศึกษาพบว่าคนไทยที่ใช้ภาษาเยอรมันมีปัญหาในการออกเสียงตัวสะกดเดี่ยวและตัวสะกดควบกล้ำบางเสียงในภาษาเยอรมัน โดยเฉพาะตัวสะกดที่ไม่มีปรากฏในภาษาไทย โดยเสียงเหล่านี้จะถูกแทรกแซงจากภาษาแม่ โดยการละออกหรือเบี่ยงเบนการออกเสียงให้คล้ายกับตัวสะกดในภาษาไทย ผลการศึกษาพบว่า Youtuber ทุกคนสามารถออกเสียงพยัญชนะท้ายบางเสียงได้อย่างถูกต้อง แต่บางเสียง อาทิเช่น /tʰ, kʰ, n, f, s, ʒ, x, l, stʰ, ntʰ, ʒtʰ, xtʰ, tʃ/ ยังคงเป็นปัญหาเนื่องจากความแตกต่างระหว่างสัทศาสตร์ของภาษาไทยกับภาษาเยอรมัน

### บทความวิจัย

### บทคัดย่อ

### คำสำคัญ

เสียงพยัญชนะท้าย;  
ภาษาเยอรมัน;  
การแทรกแซงของภาษาแม่;  
ภาษาต่างประเทศ;  
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## 1. Introduction

German and Thai final consonants exhibit significant differences in their phonetic characteristics and usage within each language. These dissimilarities encompass the number of final consonants, the patterns of consonant combinations, and the manner of pronunciation.

In German, a wide array of final consonants exists, contrasting with the limited repertoire found in Thai. German words can conclude with various consonant sounds, whereas Thai is constrained to a more restricted set of final consonants. Additionally, German permits the occurrence of two or more consonants at the end of a word, leading to the formation of final consonant clusters, a phenomenon not typically observed in Thai. Furthermore, the enunciation of final consonants diverges between the two languages. German speakers tend to articulate final consonants with greater clarity, while Thai speakers' pronunciation of final consonants is contingent upon the phonetic context and tonal aspects. In certain instances, Thai final consonants may even be rendered silent (cf. Kanokpermpoon, 2007; Pankhuenkhat, 2009; Fuhrhop & Peters, 2013).

According to these differences, many Thais would make deviations that sometimes they cannot always articulate the foreign final sound (Attaviryanupap, 2006, p. 29). The concern lies in the fact that these mispronunciations may result in misunderstandings during conversations between Thai learners of German and native speakers. Two YouTube videos are used here as examples to illustrate this problem.

The first video is *Pad Kaprao Rezept Das Beliebteste Gericht von Thailand* (Pad Kaprao Recipe, The Most Popular Dish of Thailand) from the channel *Bangkok Fieber*, which is owned by a German and his Thai girlfriend. The girlfriend prepares Pad Kaprao, and explains the recipe in German. There are German words with different endings that she pronounces without an aspiration. For example, the German words with the final consonant /ç/: *Gericht* /gə'ʀɪçʰ/, *nicht* /nɪçʰ/ and *mich* /mɪç/, yet she pronounces the words /ge:ʀɪs, nɪk/ and /mɪk/. The final sound /ʰ/ in *Gericht* and *nicht* is not articulated.

In addition, the final consonant clustering, which is a phenomenon in German where two or more consonants appear at the end of a word (cf. Pompino-Marshall, 2016, p. 121), presents a challenge for her: *weiß* /vaɪʃʰ/, *letzten* /lɛʃtɪn/, *zuerst* /tsu'ʔe:ɛʃʰ/, *schmeckt* /'ʃmɛkʰ/ and *Rindfleisch* /rɪnʰflaɪʃ/. Her pronunciation of these words is /vaɪs, lɛʃten, tsu'ʔe:ɛs, 'ʃmɛk/ and /rɪnflaɪ/ respectively.

The second video is called *Thailand für zu Hause: Thaigerichte zum Nachkochen | Abenteuer Leben | Kabel Eins* (Thailand for home: Thai dishes to cook at home | Adventure life | Kabel Eins) from the German channel *Abenteuer Leben* on YouTube. The channel interviews Khun Meo, a Thai cook from Berlin, and portrays some famous Thai specialties. In the video, Khun Meo speaks German, although some words sound more like a Thai accent. The words are for example *meistens*, *gemacht*, *dunkelrot*, *natürlich*, *braucht* and *Abend*, which are usually transcribed /'maɪʃtɪŋs, gə'maxʰ, 'dʊŋklʀo:tʰ, na'ty:ɐlɪç, 'braʊxʰ/ and /'a:bɪnʰ/, although she pronounces them /'maɪʃtɪn, gə'mak, 'dʊŋkənro:t, na'ty:ɐlɪʃ, 'braʊ/

and /'a:bən/. The examples show that she consciously or unconsciously omits certain final and cluster sounds.

Hence, this research aims to investigate and prove the hypothesis that it is problematic for Thai people to pronounce some German final consonants correctly especially the clusters and final-obstruent devoicing because of the different phonotactic patterns of the final consonants, The results have the potential to tackle the problem of mispronunciation in Thai students learning German. If, upon obtaining the findings, it is determined that certain German final consonant sounds are causing challenges for Thai learners, it may be worth exploring the use of phonetic exercises to improve their pronunciation. In a subsequent study, the effectiveness of these exercises in assisting the learners could be evaluated.

## 2. Sound Systems and Relevant Related Research

As mentioned in the introduction, German and Thai have different sound systems: the number of final consonants, the combinations of final consonants and pronunciations. Therefore, the final sound systems' characteristics and structures will be described in this section. Moreover, as this research will illustrate the problem of the final sounds' pronunciation, the related research about these will also be indicated in this section.

### 2.1 Peculiarities of Final Sound Systems and Their Structures

According to Sapp's Introduction to German Linguistics (2019, p. 26), a traditional term for the end of a word or final consonant is when the plosives and fricatives are devoiced at the end of the word, it is called final-obstruent devoicing or terminal devoicing (Auslautverhärtung), which is found just in German but not in Thai language. German and Thai languages have both different and similar final sounds. The German final sounds contain /p<sup>h</sup>, t<sup>h</sup>, k<sup>h</sup>, pf, ts, tʃ, f, s, ʃ, ç, x, m, n, ŋ, l/, which are plosive, affricate, fricative and nasal and lateral sounds. Thai language consists of nine final sounds, i.e. /p, t, k, m, n, ŋ, j, w, ʔ/. The /p, t, k, ʔ/ are plosive sounds, /m, n, ŋ/ are nasal sounds, and /j, w/ are approximant sounds. As mentioned that Thai does not have terminal devoicing, so the /p, t, k/ in Thai that appear as the final sounds are voiceless and pronounced with no audible release (Lerdpaisalwong, 2015, p. 40; Kanokpermpoon, 2007, p. 59). As shown, German has more final sounds than Thai, namely /f, s, ʃ, ç, x, l, pf, ts, tʃ/ and the cluster sounds, e.g., /st<sup>h</sup>/ or /ft<sup>h</sup>/ which do not exist in Thai (Wongsuriya, 2020, p. 177).

## 2.2 Research on The Analysis of Final Sounds

Many research studies, such as the research by Atthaphonphiphat (2015, 2017), Ketkumbonk and Woragittanont (2017), Kanokpermpoon (2007) and Schmidt (1989) found that Thai (students) as nonnative speakers normally have a problem with final consonant production in English, especially the final sounds that do not exist in Thai language. Kanokpermpoon indicates in his study that it is problematic when Thai students learn to express the sound /p, t, k/ in English final syllables because these in Thai are pronounced without any discernible release of sound.

In 2006, Attaviryanupap conducted a study on pronunciation deviations in Standard German among Thai female immigrants in German-speaking Switzerland. The study provided evidence that Thai immigrants in Switzerland encountered difficulties articulating Swiss German's final sounds. This was attributed to the fact that the German language requires an assertive and precise articulation, whereas the Thai language is characterized by a more economical articulation, influenced by linguistic habits.

Various research studies, including the works of Atthaphonphiphat (2015), Nimphaibule (1996), Rongwiriaphanich and Charunrochan (2008) and Suntornsawet (2022) have discovered that Thai learners often incorporate certain features from their native language, resulting in negative transfer. According to the definition provided by the Royal Institute (2010), negative transfer refers to the adoption of characteristics or rules from one's mother tongue into a second or target language, leading to language mistakes or inappropriate language usage (cf. Atthaphonphiphat, 2017).

Moreover, there are investigations, including the works of Yun (2011) and Smith and Peterson (2012), which found that non-native speakers, in these cases Korean and English native speakers, have faced the problem while learning German as a foreign language, whether with the pronunciation's duration of the final devoicing, e.g., the voicing contrast was maintained in terms of closure duration of the preceding consonant and duration of the preceding vowel, and with a tendency toward devoicing voiced targets in German relative to their native language productions of similar words.

## 3. Methodology

This research endeavor seeks to examine and substantiate the proposition that Thai individuals encounter difficulties in accurately articulating specific German final consonants, particularly clusters, primarily due to the distinctive phonological functions associated with these terminal sounds. The study aims to provide empirical evidence to support the hypothesis, illuminating the underlying factors influencing this phonological issue faced by Thai speakers when attempting to pronounce German final consonants.

### 3.1 Analysis Materials

This research collected pronunciation data of German final consonant sounds from 14 YouTube videos that are held by five Thai YouTubers who teach German via this online platform. Five videos are from the channel *German with Onya*, four from *ภาษาเยอรมันกับ Jacky* (German with Jacky), one from *เยอรมันกับครูโบ GERMAN AND BO*, two from *Baanpasa* and finally two from *ABC Deutsch Udon Thani ครูเป่า* (ABC German Udon Thani Teacher Pao). Based on the content observed in the videos, it can be inferred that the YouTubers exhibit a proficiency level of at least B2, as they offer instructional material at the B2 level. Their target audience primarily comprises Thai learners of German seeking to attain proficiency levels ranging from A1 to B2. The video durations vary, with some lessons spanning multiple episodes, but the average duration typically falls within the 10 to 20-minute range. The video content predominantly focuses on fundamental topics such as greetings and basic sentences commonly encountered at the A1 level, and these foundational elements are recurrently integrated into various video lessons.

The reason behind the selection of YouTubers who offer German lessons on the platform for this study lies in their unique ability to teach grammar and address pronunciation aspects, whether consciously or unconsciously. This research focuses on investigating the potential interference of the participants' mother tongue, Thai, on their German pronunciation. By limiting the selection to these specific YouTubers, the investigation aims to discern the extent to which Thai language influences the learners' pronunciation of German.

Moreover, the study deliberately excludes YouTubers who are bilingual in both Thai and German and possess native-level proficiency in both languages. This decision is motivated by the fact that such speakers are less likely to exhibit significant foreign language interference during their German pronunciation, thereby reducing the potential impact on the investigation's findings.

### 3.2 Data Collection and Analysis Procedure

This research is qualitatively collected by using 14 YouTube videos from five Thai YouTubers as mentioned above. During the video observation, the instructional content, encompassing vocabularies and phrases imparted by the YouTubers to their audience, has been systematically gathered and categorized based on their respective final phonetic characteristics, namely /t<sup>h</sup>, k<sup>h</sup>, m, n, s, ʃ, ç, x, l, st<sup>h</sup>/ and other clusters and affricate such as /xt<sup>h</sup>, çt<sup>h</sup>, nʃ, ft<sup>h</sup>, nt<sup>h</sup> and tʃ/. Certain final sounds were omitted from the data collection process as they were not explicitly addressed or referenced in the instructional videos. Hence, these unmentioned final sounds were not included in the analysis. Subsequently, the identified words were meticulously transcribed into the International Phonetic Alphabet (IPA), and the YouTubers placed

particular emphasis on the enunciations. Instances of mispronunciations were also transcribed using the IPA notation, garnering special attention during the analysis.

The analytical framework employed in this study draws upon the prior research and books on final sounds, as elucidated earlier, along with the conceptual frameworks presented by Schmidt (1997) and Zilberman (2020) concerning second language acquisition.

## 4. Research Findings

Upon categorizing the course content according to its corresponding final phonetic characteristics, the outcomes (68 words) are depicted in Table 1 (cf. the last page of the research). This table showing 68 words presents the phonemes, words, their accurate IPA representations, as well as instances of mispronunciations by select YouTubers. For cases where the mispronunciation column is left blank, it signifies that the words were correctly pronounced in accordance with phonetics and phonation principles.

Based on the table's observations, it is evident that certain final sounds and clusters, specifically /m, ʃ, nst<sup>h</sup>, ft<sup>h</sup>, nf/, are not problematic for the YouTubers, as they pronounce them accurately. Conversely, the remaining final sounds /t<sup>h</sup>, k<sup>h</sup>, n, f, s, ç, x, l, st<sup>h</sup>, nt<sup>h</sup>, çt<sup>h</sup>, xt<sup>h</sup>, tʃ/ are subject to partial mispronunciations by the YouTubers. The following section provides a detailed analysis of the identified phenomena.

### 4.1 Plosives /t<sup>h</sup>, k<sup>h</sup>/

In German, the plosive final sounds consistently undergo a phenomenon known as final-obstruent devoicing, which contrasts with the absence of such devoicing in Thai. In Thai, plosive final sounds are articulated without an audible release (Kanokpermpoon, 2007, p. 59). However, it is noteworthy that not all words with /t<sup>h</sup>, k<sup>h</sup>/ pronounced in the videos are mispronounced, indicating the need for particular attention to be given to the aspirated /t/ sound as well. According to Kanokpermpoon (2007), native speakers of a language may find it challenging to pronounce unfamiliar sounds that do not occur naturally within their language's phonetic inventory. Hence, there is a likelihood that the sounds /t<sup>h</sup>/ and /k<sup>h</sup>/ in German are substituted with Thai /t̚/ and /k̚/ sounds, respectively, which are prevalent in the Thai language (Attaviriyapap, 2006, p. 21), i.e. the words *Fahrrad* and *Weg* are pronounced with an inaudible release /'fa:ɐra:t̚/ and /vɛk̚/, rather than utilizing aspiration /'fa:ɐra:t<sup>h</sup>/ and /vɛk<sup>h</sup>/, which is consistent with Schmidt (1997, p. 77) who provides supporting evidence for this phenomenon that phonetic interference influences the pronunciation of a foreign language through the phonetic inventory and habits of pronunciation in the native language.

## 4.2 Nasal /n/

The observation that the YouTubers encounter difficulties with the final sound /n/, despite its existence as a final consonant in Thai, is intriguing. A more in-depth examination of words featuring the final sound /n/ reveals that the issue originates from the vowels. The majority of words with /n/ as a final sound in the videos are pronounced accurately, with the exception of the final consonant <n> following the vowels /aɪ̯/ and /ɔ̯y/, which presents difficulties for some individual subjects. These similar vowels also exist in the Thai language, but Thais are accustomed to pronouncing /aːj/ and /ɔːj/, as /j/ in Thai represents a semivowel or approximant, after which no other final consonants follow. Consequently, when words like *mein*, *nein*, *neun*, and *Freundin* are pronounced, many Thais, and consequently some YouTubers, transfer this rule from the Thai language to German, resulting in the omission of final consonants. These words are then pronounced by the YouTubers as /maɪ̯, naɪ̯, nɔ̯y/ and /'frɔ̯y.dɪn/, instead of /maɪ̯n, naɪ̯n, nɔ̯yn/ and /'frɔ̯yn.dɪn/, respectively, leading to deviations from the standard pronunciation.

## 4.3 Fricatives /f, s, ç, x/

The absence of final fricatives in the Thai language is the underlying reason why Thai learners might encounter problems in pronouncing German fricatives.

The voiceless fricative sound /f/ occurs exclusively in Thai initial consonants, making it challenging for Thais to pronounce. Table 1 illustrates the substitution of /p/ for /f/ in the word *Chef*, which ideally should be pronounced as /ʃɛf/ but is pronounced as /ʃɛp̚/ instead. As in Thai, when the letters <f> or <ฟ> appear in the final position, they are pronounced as /p̚/ (cf. Attaviryanupap, 2006, p. 26; Lerdpaisalwong, 2015, p. 70). According to Atthaphonphiphat (2017, p. 188), the sound /f/ shares the same place of articulation on the lips as /p/, and her findings align with Schmidt's observations in the Plosive section, indicating that the erroneous pronunciation of a foreign language can be attributed to the influence of the speaker's mother tongue. Kanokpermpoon (2007) corroborates this observation, providing evidence that Thai learners tend to substitute the final voiceless fricatives with their corresponding Thai finals or omit them altogether.

Nonetheless, as depicted in Table 1, a substantial number of gathered words with /f/ as the final sound are accurately pronounced. This could be attributed to the fact that /f/ as a final sound bears similarity to English pronunciation, and the majority of Thais are acquainted with it, enabling them to articulate it correctly (cf. Atthaphonphiphat, 2017). According to Zilberman (2020), learning a foreign language becomes more challenging for individuals over the age of 18 compared to children and adolescents, approximately under 12 years old, due to the latter's ability to acquire a foreign language akin to their native language. Conversely, adults encounter difficulties in language learning as they have already formed strong habits with their first language, leading to a blending of both languages, native and foreign,



as their speech apparatus is firmly established with the native language. Furthermore, despite the absence of /f/ as a final sound in the Thai language, /f/ does exist as an initial sound in the form of a voiceless labiodental fricative. When Thais articulate words with /f/ at the beginning, they produce /f/ by constricting their upper and lower lips to initiate the breath flow, which is combined with vowels and/or final consonants. Consequently, it can be posited that this flow of breath might also be employed by Thais as a method to pronounce a final sound in certain instances.

/s/ refers to a voiceless fricative sound. Although Thai does have /s/, it only appears in the onset position, not in the coda position (cf. Pankhuenkhat, 2009, p. 32). However, a problem arises when /s/ is a final consonant of a primary noun. For instance, in the word *ein bisschen* /aɪn bɪʃən/, a YouTuber pronounces it as /aɪn bɪtʰən/. In this case, /s/ changes to /t/, and /ç/ changes to /ʃ/. The reason behind this is that /s/ and /t/ share the same place of articulation, namely alveolar, while /ç/ and /ʃ/ share the same manner of articulation, namely fricative (Fuhrhop & Peters, 2013, p. 32). Furthermore, this phenomenon aligns with the discovery made by Attaviriyapap (2006), wherein the absence of the fricative /s/ at the end of a syllable in Thai leads to variations in the final sound of these consonants. In place of a fricative, a stop sound is utilized. Hence, such a phenomenon can occur. Another reason lies in the YouTuber's incorrect syllable segmentation, where *ein bisschen* is segmented as *ein bis-schen* instead of *ein bisschen*, an error that non-native speakers would not typically make.

In addition to the aforementioned /s/ and /t/ characteristics, it is also worth noting that the Thai script <s> is usually realized as <ซ, ส, ศ, and ษ> in the onset position. However, in the coda position, they are pronounced as an unaspirated /t/. Therefore, it is also observed in the instructional videos that the same YouTuber, when pronouncing the word *was*, he/she does not articulate the /s/ at the end, but rather pronounces it like /tʰ/, as /vatʰ/ instead of /vas/.

Nevertheless, according to Atthaphonphiphat (2017), the final consonant sound /s/ in the English language was correctly pronounced by the sample students. As the final sound /s/ in both English and German does not vary, it is conceivable that Thai learners, who are already acquainted with the final sound /s/ (not present in the Thai language), experience fewer mispronunciations compared to correct pronunciations.

/ç/ and /x/ represent a significant problem for Thai learners of German, as they are unfamiliar coda sounds that do not exist in either Thai or English. The articulation of these fricatives involves creating a narrow space between the upper front of the tongue and the front of the palate.

A sound in Thai that closely resembles /ç/ and /x/ is /k/. The reasons supported by evidence are twofold: first, /ç/ and /x/ exhibit the same manner of articulation, namely fricative; and second, /x/, /g/ and /k/ share the same place of articulation, namely velar (cf. Attaviriyapap, 2006, p. 26). This can be observed, e.g., when the suffix <-ig> is pronounced as /ɪk/ instead of /ɪç/ by some YouTubers due to the similar orthography of the final consonant. Examples include *Ledig*, *Lustig*, *Schwierig* and *König*, which

are articulated as /'le:diç, 'lʊstiç, 'ʃvi:riç/ and /'kø:niç/, respectively. Approximately 80% of the YouTubers pronounce these words as /'le:di:k, 'lʊsti:k, 'ʃvi:ri:k/ and /'kø:ni:k/, substituting /k/ for /ç/ when they encounter <g> in the spelling. Additionally, the word *Loch* is pronounced as /lɔk/ instead of /lɔx/. However, the words ending with <-ich>, such as *Mich*, *Männlich* and *Dich* and are pronounced effortlessly in the videos. While this conclusion cannot be definitively established within the scope of this study, it appears plausible, particularly considering that words with <-ich> could be categorized as common and utilized in the everyday life of the YouTubers.

However, the dialect or other phonetic/phonological patterns play an essential role in pronouncing final sounds (cf. Smith & Petersons, 2012, p. 139). In various German dialects, such as East Central German, West Central German, Eastern Low German, and East German dialects or in other German-speaking countries, the German final syllables <-ig> and <-ich> can be pronounced as /ɪk/ or /ɪf/. It is possible that certain YouTubers use dialectal pronunciations in the videos. There is a potential for certain YouTubers to inadvertently introduce elements of their regional dialect while instructing standard German.

#### 4.4 Lateral /l/

As asserted by Attaviriyapap (2006), Kanokpermpoon (2007) and Lerdpaisalwong (2015) the final consonant /l/ in the Thai language is prone to be replaced by /n/ or /w/, which corresponds to the mispronunciations of certain words with the final sound /l/ in Table 1. Three mispronounced words, namely *Fußball* /'fu:s,ball/, *Mal* /ma:l/ and *Unterhaltung* /ʊntɐ'haltʊŋ/, are pronounced with Thai /n/ and /w/ (sometimes German /ʊ/) as /'fu:s,ban, māw, ʊntɐ'hāwtʊŋ or ʊntɐ'haʊtʊŋ/ respectively. When /w/ occurs as a final sound, it is realized as a velar semi-vowel rather than a bilabial, leading to its pronunciation resembling the vowel /ʊ, u/. Additionally, the substitution of /n/ is clearly attributed to the influence of the native language.

#### 4.5 The cluster /st<sup>h</sup>/

Lerdpaisalwong (2015) stated that consonant clusters in the coda position are not permitted in the Thai language, although Thai exhibits a wealth of initial consonant clusters. Consequently, it becomes uncharted territory for Thai individuals to enunciate these clusters as final sounds. The cluster most frequently encountered across all videos is /st<sup>h</sup>/, along with other clusters culminating in /st<sup>h</sup>/, such as /ŋst<sup>h</sup>, nst<sup>h</sup>, pst<sup>h</sup>, çst<sup>h</sup>, xst<sup>h</sup>/. Potential explanations for the deviation observed in this cluster encompass the omission of /t<sup>h</sup>/, occasional omission of /s/ with only /t<sup>h</sup>/ remaining, and when the cluster encompasses multiple consonants, either one of these consonants or /st<sup>h</sup>/ itself may be omitted. The terms *Angst* /aŋst<sup>h</sup>/, *Kochst* /kɔxst<sup>h</sup>/, *Lasst* /last<sup>h</sup>/, *Musst* /mʊst<sup>h</sup>/, *Sonst* /zɔnst<sup>h</sup>/ and *Sprichst* /ʃpɪçst<sup>h</sup>/ exhibit pronunciations of /aŋk<sup>h</sup> or aŋs, kɔx, las, mʊs, zɔns or zɔnt<sup>h</sup>, ʃpɪtst<sup>h</sup>/ respectively, as presented in Table 1.

The occurrence of the /st<sup>h</sup>/ cluster at the word's final position presents a difficulty due to the necessitated rapid and accurate coordination of the tongue, lips, and vocal tract during the transition from /s/ to /t<sup>h</sup>/. This intricate process is further complicated by the distinct nature of the /s/ sound, characterized as a fricative with a continuous airflow, and the /t<sup>h</sup>/ sound, a plosive involving a sudden release of airflow. The successful execution of this transition requires meticulous timing and muscular control, potentially causing issues for certain YouTubers and Thai speakers. Occasionally, the problem becomes more intricate when faced with clusters featuring more than two consonants. In such scenarios, there is a heightened level of complexity. Either the /s/ or /t<sup>h</sup>/ sound may be omitted, or conceivably, both, while the remaining consonants within the cluster are generally retained.

#### 4.6 Other clusters /nt<sup>h</sup>, çt<sup>h</sup>, xt<sup>h</sup>/ and Affricate /tʃ/

In addition to the previously discussed /st<sup>h</sup>/ cluster, other problematic clusters and affricate exist for the YouTubers, namely /nt<sup>h</sup>, çt<sup>h</sup>, xt<sup>h</sup>, tʃ/. These consonants represent a problem due to the intricate articulatory demands involved, which are unfamiliar to speakers of Thai.

Commencing with the /nt/ or /nt<sup>h</sup>/ cluster, the transition from the nasal sound /n/ to the voiceless plosive sound /t/ necessitates a swift shift in articulation. The nasal sound involves airflow through the nose, while the plosive sound mandates a sudden release of airflow. Achieving the coordination of these transitions demands precise control over tongue and airflow, a complexity that proves challenging for Thai speakers (cf. Côté, 2004). This results in mispronunciations such as *Abend* /'a.bɛnt<sup>h</sup>/ and *Kenntnisse* /'kɛntnɪsə/ being rendered as /'a:bɛ/ and /'kɛnɪsə/, respectively.

Moving on to /çt<sup>h</sup>, xt<sup>h</sup>, tʃ/ clusters that cause the same problem for Thai learners of German, which is that each of these three combinations of consonants contains one fricative and one plosive.

The /çt<sup>h</sup>/ and /xt<sup>h</sup>/ clusters involve transitioning from the voiceless fricative sound /ç/ and /x/ to the voiceless plosive sound /t/, each requiring specific articulatory mechanisms. /ç/ involves constricting airstream between the back of the tongue and the velum (Palatal), generating a fricative sound, and /x/ entails constriction at the back of the oral cavity (Velar), creating a fricative sound through a narrow opening, while /t/ necessitates the blocking and rapid release of airflow (Alveolar), leading to a short explosive sound. The complexity lies in precise and swift coordination for a smooth /ç/ to /t/ and /x/ to /t/ transition, demanding intricate position of tongue, airstream, and rhythm (cf. Wright, 1996). This intricate coordination causes troubles for Thai speakers, resulting in mispronunciations of words with /çt<sup>h</sup>/ like *Nicht* /niçt<sup>h</sup>/, *Schlecht* /ʃlɛçt<sup>h</sup>/, and *Spricht* /ʃpɪçt<sup>h</sup>/, often pronounced as /nakt<sup>h</sup>, niç or nit<sup>h</sup>, ʃpɪt<sup>h</sup>/, respectively, and for /xt<sup>h</sup>/ is *Acht* /axt<sup>h</sup>/ as /ax/.

Lastly is the affricate /tʃ/. Concerning Thai phonetics, the repertoire of available affricates consists of just two: the voiceless aspirated alveolo-palatal affricate /tʃ<sup>h</sup>/ and the voiceless unaspirated alveolo-

palatal affricate /tʃ/ (Kanokpermpoon, 2007, p. 63). However, in German, there are four affricates: /ts/ as in *Zeit*, /tʃ/ as in *Deutsch*, /pf/ as in *Apfel* and /dʒ/ as in *Gin* (cf. Attaviryanupap, 2006, p. 19).

This affricate involves transitioning from a voiceless plosive sound /t/ to a voiceless postalveolar fricative sound /ʃ/. The /t/ sound entails blocking and abrupt release of airflow (Alveolar) as indicated above, while the /ʃ/ sound requires constriction with the tongue near the postalveolar region (Palatal), producing a fricative sound. The difficulty arises from the swift and precise coordination necessary to transition from /t/ to /ʃ/, involving intricate manipulation of the tongue, lips, and airstream, which are similar to other cluster problems indicated above. This complexity results in mispronunciations like /dɔʏʃ/ for the word *Deutsch*, which is typically articulated as /dɔʏtʃ/.

## 5. Closing

The findings outlined above emphasize the potential discrepancies in pronunciation among Thai YouTubers who create German learning content on the platform. These deviations can be attributed to phonetic interference resulting from native pronunciation habits, particularly concerning the examined final consonant sounds.

The hypothesis can now be substantiated, indicating that while certain YouTubers may face problems in correctly pronouncing German final sounds, this issue does not necessarily happen with all of the sounds. The research outcomes distinctly reveal that specific final sounds, namely those ending in /m, ʃ, nstʰ, ftʰ, nʃ/, do not pose difficulties for the YouTubers. However, certain speakers encounter issues with particular final sounds, such as /tʰ, kʰ, n, f, s, ʒ, x, l, stʰ, ntʰ, ʒtʰ, xtʰ, tʃ/ due to the distinct phonetic patterns of final consonants in Thai and German. Notably, the absence of final-obstruent devoicing and syllable codas in the Thai language, unlike German, can account for these difficulties, prompting Thais to omit or substitute the devoicing.

Moreover, the research emphasizes that while the YouTubers are teaching German, problems also stem from the diversity of German pronunciation due to language strategies and habits. Thus, they should be cognizant of the German variety they address in their videos, whether they are dialectal or standardized German. If they regularly employ dialect in their everyday speech, they may be conscious of this and exercise caution when teaching, as they are expected to adhere to standard German in their instructional videos, particularly since they are catering to students preparing for examinations.

Following the acquisition of the findings, if it is determined that certain German final consonant sounds pose challenges for Thai learners, it may be feasible to offer them phonetic exercises for practicing pronunciation. Subsequently, it can be assessed whether these exercises are effective in improving their pronunciation.

Moreover, given that certain final sounds like /m, ʃ, nst<sup>h</sup>, ft<sup>h</sup>, nʃ/ pose no obstacles to the YouTubers' pronunciation, it becomes a compelling avenue of inquiry for future research to delve into the reasons underlying this phenomenon.

Table 1:

*The transcripts of spoken words from the videos*

Phonemes	Words	IPA	Mispronunciations
/t <sup>h</sup> /	Deutschland Fahrrad (Es) geht kaputt Ort Rad	/ˈdɔɪtʃ.lant <sup>h</sup> / /ˈfa:ɐra:t <sup>h</sup> / /ˈge:t <sup>h</sup> / /kaˈput <sup>h</sup> / /ɔrt <sup>h</sup> / /ra:t <sup>h</sup> /	/ˈfa:ɐra:t <sup>ʔ</sup> /
/k <sup>h</sup> /	Sonntag weg (Adv.) Zug	/ˈzɔn.ta:k <sup>h</sup> / /vɛk <sup>h</sup> / /tsu:k/	/vɛk <sup>ʔ</sup> /
/m/	angenehm am Problem warum	/ˈʔangə.ne:m/ /am/ /proˈble:m/ /vaˈrʊm/	
/n/	(Ich) bin Freundin mein nein neun schön sehen wann	/bɪn/ /ˈfrɔ̃yn.dɪn/ /maɪn/ /naɪn/ /nɔ̃yn/ /ʃø:n/ /ˈze:ən/ /van/	/ˈfrɔ̃y.dɪn/ /maɪ/ /naɪ/ /nɔ̃y/
/f/	Beruf Chef Ruf ... an! schlaf	/bəˈru:f/ /ʃɛf/ /ru:f ... an/ /ʃla:f/	/ʃɛp <sup>ʔ</sup> /
/s/	das ein bisschen Haus uns	/das/ /aɪn bɪʃçən/ /haʊs/ /ʊns/	/aɪn bɪt <sup>ʔ</sup> ʃən/

Phonemes	Words	IPA	Mispronunciations
	was	/vas/	/vat̃/
/f/	Fisch sympathisch thailändisch	/fɪʃ/ /zymˈpa:ɪʃ/ /ˈtai̯lɛndɪʃ/	
/ç/	dich König ledig lustig	/dɪç/ /ˈkø:nɪç/ /ˈle:dɪç/ /ˈlustɪç/	/ˈkø:nɪk/ /ˈle:dɪk/ /ˈlustɪk/
/ç/	mich männlich schwierig	/mɪç/ /ˈmɛnɪç/ /ˈʃvi:ɾɪç/	/ˈʃvi:ɾɪk/
/x/	Buch Loch nach	/bu:x/ /lɔx/ /na:x/	/lɔk/
/l/	Fußball (Ich) halte mal Müll Unterhaltung	/ˈfu:sˌbal/ /ˈhaltə/ /ma:l/ /mʏl/ /ʊntɐˈhaltʊŋ/	/ˈfu:sˌban/  /māw/  /ʊntɐˈhāwtʊŋ/ /ʊntɐˈhautʊŋ/
/stʰ/ and other clusters with /stʰ/ at the end	Angst (Du) bist Dienst (Du) kochst (Du) lasst (Du) musst Obst sonst (Du) sprichst	/aŋstʰ/ /bɪstʰ/ /di:nstʰ/ /kɔxstʰ/ /lastʰ/ /mʊstʰ/ /ɔpstʰ/ /zɔnstʰ/ /ʃpɪçstʰ/	/aŋkʰ/, /aŋs/   /kɔx/ /las/ /mʊs/  /zɔns/, /zɔntʰ/ /ʃpɪtstʰ/
Other clusters	Abend Acht Deutsch Heft Kenntnisse Kind	/ˈa:bntʰ/ /axtʰ/ /dɔytʃ/ /heftʰ/ /ˈkɛntnɪsə/ /kɪntʰ/	/ˈa:bn/ /ax/ /dɔyʃ/  /ˈkɛnɪsə/

Phonemes	Words	IPA	Mispronunciations
	Mensch	/mɛnʃ/	
	Nacht	/naxt/	
	nicht	/niçt <sup>h</sup> /	/nakt <sup>h</sup> /
	schlecht	/ʃɛçt <sup>h</sup> /	/niç/, /nit <sup>h</sup> /
	(Er) spricht	/ʃpɪçt <sup>h</sup> /	/ʃpɪt <sup>h</sup> /

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