

McCurdy, S. Hmong Learners' Deletion and Replacement of Syllable-final Consonants in English (2010)

Many ESL professionals have anecdotally noted that Hmong ESL learners delete syllable-final consonants in English. Syllable simplification such as this can cause a speaker to be unintelligible. The purpose of this study was to examine which consonants Hmong ESL learners delete or replace syllable-finally in English. Fifteen adult Hmong ESL learners completed three tasks designed to elicit a variety of syllable-final consonants: A spontaneous speech sample, a list of sentences and a list of words read aloud. The results were then analyzed for frequency and type of syllable-final consonant simplification and for error rates of specific consonants. The results of this study show the participants deleting /d, g, v/ most frequently overall, and replacing /ð, ʒ, θ/ most frequently overall. There was variation, however, across task. Participants deleted stops most frequently, and affricates were most frequently replaced. Voicing did not seem to have an overall influence on deletion or replacement.

HMONG LEARNERS' DELETION AND REPLACEMENT OF SYLLABLE-FINAL
CONSONANTS IN ENGLISH

by

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To Dan and Zev
Your insatiable curiosity inspires me.
I love you.

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TABLE OF CONTENTS

| | |
|--|----|
| CHAPTER ONE: INTRODUCTION..... | 1 |
| Conclusion | 7 |
| CHAPTER TWO: LITERATURE REVIEW | 8 |
| Importance of Pronunciation Instruction in the Classroom | 8 |
| Studies to Support Targeted Pronunciation Instruction | 11 |
| Linguistic Errors and Intelligibility | 14 |
| Non-native Pronunciation and Intolerance | 17 |
| English versus Hmong Syllable Structure | 18 |
| Syllable Simplification..... | 19 |
| CHAPTER THREE: METHODS | 26 |
| Research Paradigm..... | 26 |
| Participants..... | 27 |

| | |
|---|-----------|
| Setting | 28 |
| Triangulation of Data | 29 |
| Ethics..... | 29 |
| Data Collection | 30 |
| Data Analysis | 32 |
| Conclusion | 34 |
| CHAPTER FOUR: RESULTS | 35 |
| Results Overall..... | 36 |
| Overall Deletion Results..... | 36 |
| Overall Results and Manner of Articulation..... | 37 |
| State of the Glottis and Deletion..... | 38 |
| Word Task – Deletion..... | 39 |
| Word Task and Manner of Articulation..... | 40 |
| Sentence Task – Deletion..... | 41 |
| Sentence Task and Manner of Articulation | 42 |

| | |
|---|----|
| Spontaneous Speech Task – Deletion..... | 43 |
| Spontaneous Speech Task and Manner of Articulation..... | 44 |
| Manner of Articulation Overall – Deletion..... | 45 |
| Deletion Rates Discussion | 46 |
| Overall Replacement Results..... | 49 |
| State of the Glottis and Replacement..... | 51 |
| Word Task – Replacement..... | 52 |
| Word Task and Manner of Articulation..... | 53 |
| Sentence Task – Replacement | 54 |
| Sentence Task and Manner of Articulation | 55 |
| Spontaneous Speech Task – Replacement..... | 56 |
| Spontaneous Speech and Manner of Articulation..... | 57 |
| Manner of Articulation Overall – Replacement..... | 58 |
| Replacement Rates Discussion | 59 |
| Deletion versus Replacement..... | 63 |

| | |
|--|----|
| Other Influences..... | 66 |
| Conclusion | 68 |
| CHAPTER FIVE: CONCLUSION..... | 69 |
| Notable Findings..... | 70 |
| Recommendations for Teachers..... | 72 |
| Limitations | 73 |
| Suggestions for Further Study | 74 |
| Dissemination of Results | 76 |
| Reflection..... | 76 |
| References..... | 78 |
| Appendix A: Task 1: Word List Containing Syllable-final Consonants | 82 |
| Appendix B: Task 2: Sentence List Containing Syllable-final Consonants | 85 |

LIST OF TABLES AND FIGURES

| | |
|--|----|
| Table 3.1: Participant Data | 28 |
| Table 3.2: Allowable Syllable-final Consonants in North American English..... | 33 |
| Table 4.1: Overall Deletion Rates..... | 37 |
| Table 4.2: Overall Deletion Rates by Manner of Articulation..... | 38 |
| Table 4.3: Word Task Deletion Rates..... | 40 |
| Table 4.4: Word Task Deletion Rates by Manner of Articulation..... | 41 |
| Table 4.5: Sentence Task Deletion Rates | 42 |
| Table 4.6: Sentence Task Deletion Rates by Manner of Articulation | 43 |
| Table 4.7: Spontaneous Speech Task Deletion Rates..... | 44 |
| Table 4.8: Spontaneous Speech Task Deletion Rates by Manner of Articulation..... | 45 |
| Table 4.9: Overall Replacement Rates..... | 50 |

| | |
|---|----|
| Table 4.10: Overall Replacement Rates by Manner of Articulation | 51 |
| Table 4.11: Word Task Replacement Rates..... | 53 |
| Table 4.12: Word Task Replacement Rates by Manner of Articulation..... | 54 |
| Table 4.13: Sentence Task Replacement Rates | 55 |
| Table 4.14: Sentence Task Replacement Rates by Manner of Articulation | 56 |
| Table 4.15: Spontaneous Speech Task Replacement Rates | 57 |
| Table 4.16: Spontaneous Speech Task Rates by Manner of Articulation..... | 58 |
| Table 4.17: Participant Data with Simplification Rates..... | 67 |
| Figure 4.1: State of the Glottis – Deletion | 39 |
| Figure 4.2: Deletion by Manner of Articulation | 46 |
| Figure 4.3: Deletion Rates by Task..... | 47 |
| Figure 4.4: State of the Glottis – Replacement..... | 52 |
| Figure 4.5: Replacement by Manner of Articulation | 59 |
| Figure 4.6: Replacement Rates by Task | 60 |
| Figure 4.7: Most Often Deleted and Replaced Consonants | 64 |

Figure 4.8: Deletion and Replacement Rates by Task66

CHAPTER ONE: INTRODUCTION

In my work as an adult English as a Second Language (ESL) teacher educator, I have had countless opportunities to observe teachers and learners in the classroom. I work with a group of community-based organizations within which several offer structured work English programs. The programs are designed to provide intensive training for ESL learners on public assistance to gain the English skills they need to enter the job force. Each participant is required to attend class 20 hours a week at an approved learning site. Programs are expected to adhere to program instructional standards preparing learners for workplace language, common workplace skills (e.g. filling out a timesheet) and soft skills (e.g. conflict resolution). The participants are limited to two years in the program, at which time they are expected to leave public assistance and enter the workforce. During visits to one such program, I observed two Hmong learners, refugees from Laos, who were near the end of the allotted two years in the work English program. The class had just finished mingling to complete a survey of how their classmates and their classmates' children get to school. The teacher began to debrief the activity by asking the two Hmong learners, Mai and Chue, some questions:

Teacher: Mai, how do you get to school?

Mai: /ðə væ gimi ʌ ray tuw skuw/

Teacher: Oh, OK. And your children?

- Mai: /may ʃilrɛ ɡow tuw skuw ɛ ðə væ tuw/
 Teacher: How about you, Chue?
 Chue: /tiyʃə ay hæ may ow kɑ/
 Teacher: Oh, you drive. That's right. What about your children?
 Chue: /ay dray ðɛm tuw/

Although Mai and Chue's listening comprehension was high, as well as their use of grammar and vocabulary, their speech was highly unintelligible due to a tendency to delete syllable-final consonants. This seems to be a common pronunciation challenge for Hmong ESL learners, and by adjusting my "teacher's ear" accordingly, I could discern that someone or something she called /væ/ gives Mai and her children a ride to school, but I could not understand what /væ/ meant. I did understand that Chue has her own car and drives herself and her children to school. The teacher explained that Mai and her children ride a van (/væ/) to school. The teacher understood this because he had prior knowledge of how many of the learners get to school. Although both the teacher and I had strategies for understanding the learners' speech, I had concern about the learners' ability to communicate with potential employers and the general public, who may not be aware of their tendency to simplify final consonants and who cannot use prior knowledge of the learners' lives to fill in communication gaps. Another concern I had was that potential employers and the general public simply do not have the patience to deal with a person whose English is unintelligible (Mulac, Hanley, & Prigge 1974; Kalin & Rayko, 1978; Callan, Gallois & Forbes, 1983; Munro & Derwing, 1995; Llorca, 2000). Upon review of

the mandated components of a the work English program curriculum, it was surprising to find that, although these learners are enrolled in an intensive program insisting upon language instruction that prepares learners to *communicate* in the specific situation of the workplace, nowhere do they mention a need for pronunciation instruction.

Common to the other sites I visit on a regular basis, Mai and Chue's teacher recognized the learners' difficulty with pronunciation, but did not have an adequate background in phonetics or phonology to diagnose the linguistic phenomena and also did not have sufficient resources to address the pronunciation issues. Those teachers who do have the educational background enabling them to diagnose pronunciation challenges often do not have resources for integrating an effective solution into curriculum. Additionally, there are teachers I consult with who remain unconvinced as to the worth of pronunciation instruction. They have not seen it work, and neither have their colleagues. Research-based pronunciation diagnostics and classroom solutions are poorly addressed in teacher education and teacher resource books and therefore, teachers are left largely to their intuition or to solutions that do not have the support of empirical research (Derwing & Munro, 2005). In a review of current ESL teacher textbooks, Derwing & Munro found many texts omitting pronunciation altogether and others devoting only a few pages to pronunciation. The review found that many of the texts that did have a significant portion devoted to pronunciation do not cite research. Derwing & Munro do note the exception of *Teaching Pronunciation, A resource for teachers of English to speakers of other languages* (Celce-Murcia et al., 1996) as a teacher textbook that focuses on pronunciation and cites research. Because of this lack of teacher education and suitable teacher resource

texts, teachers are usually left to rely on their own and their peers' instincts when attempting to analyze pronunciation issues and when designing effective classroom activities to address those issues.

Although pronunciation does not enjoy the attention in ESL teacher resource texts that grammar or vocabulary do, pronunciation instruction is recognized as a vital component of a curriculum that seeks to develop communicative competence (Fayer & Krasinski, 1987; Derwing, Munro & Wiebe, 1998; Morley, 1991), a view that emerged in the mid-1980s after a period of doubt as to the necessity for targeted pronunciation instruction in the language classroom (Morley, 1991). Pronunciation is seen as an essential factor in curriculum because many times gaps in interlocutor communication are due to a nonnative speaker's pronunciation of the target language (Jenkins, 2000). Assisting in closing those intelligibility gaps is to assist students in increasing their chances of success within their new society. Being intelligible not only aids a speaker in communicating his/her message, but also lessens listener frustration and annoyance (Derwing & Munro, 1997). If a learner's boss, landlord or grocer cannot understand the learner's intended meaning and becomes frustrated, annoyed or irritated, communication is stalled, and there may be unwarranted judgments made about the learner's character or intelligence (Derwing & Munro, 1995). There are many research studies demonstrating that listeners project negative qualities onto speakers when assessing non-native accents (Fayer & Krasinski, 1987; Mulac, Hanley, & Prigge, 1974; Munro & Derwing, 1995; Llorca, 2000). Researchers have "noted irritation, a downgrading of attitudes towards speakers, or outright discrimination because of a non-native accent or nonstandard

dialect” (Munro & Derwing, 1995, pg. 290). These issues, communication breakdown coupled with negative character judgments, support a need for pronunciation instruction in the ESL classroom.

More often than not, teachers know that pronunciation instruction is important. Teachers understand the implications of unintelligible speech as described above. Many in the ESL teaching community with whom I work are aware of Hmong speakers’ propensity to delete syllable-final consonants in English. The understanding of this inaccuracy in Hmong learners’ pronunciation developed from anecdotal teacher observation and a presumption of L1 transfer of Hmong syllable structure. The Hmong language is open-syllable with syllables being made of three parts: an optional initial consonant, a vowel and a tone (Bliatout et al., 1988). As an open-syllable language, syllables in Hmong do not end in consonant sounds (Hmong does have the exception of nasalized vowels ending syllables, which can be considered consonant-like) (Bliatout et al., 1988). This is in contrast to English phonetics which allows up to four consonant sounds syllable-final, for example, /mpts/ in “prompts” (Prator & Robinett, 1985; Hultzen, 1965). To those looking at written Hmong for the first time, it may seem that each word does end in a consonant. However, the consonant letter at the end of the syllable indicates the tone. For example, the Hmong word for *taste* is written as *saj* and transcribed as /šǎ/ with the “j” indicating a high falling tone, not a consonant sound.

Knowledge of Hmong phonology and anecdotal observations can be helpful to teachers’ who work with Hmong speakers, but it is not enough. Lacking is *empirical*

research to inform ESL professionals of the consonants that are deleted or if another simplification strategy is employed. The research question of the present study is:

Which consonants do Hmong ESL learners delete or replace syllable-finally in English?

For example, is a Hmong speaker more likely to simplify nasal sounds such as /m/ and /n/, or fricatives such as /s/ and /θ/? Are all consonants equally problematic syllable-final? Research of this kind is important because it can be a basis for much needed classroom research investigating effective activities and techniques to use in pronunciation instruction with Hmong speakers.

I answer this question by analyzing the production of 15 low-intermediate and higher ESL Hmong speakers' on three English language tasks. Using Labov's (1972) framework of stylistic variation, the tasks are designed to elicit a variety of English language syllable-final consonants at different levels of formality. The first task is a free speech sample during which participants are asked to describe the scene in a traditional Hmong paj ntaub, an embroidered story cloth. In the second task, participants read aloud sentences containing words with syllable-final consonants. In the third task, participants read aloud a list of isolated words containing syllable-final consonants. The results were then analyzed for frequency and type of syllable-final consonant simplification and for error rates of specific consonants. Manner of articulation and voiced or unvoiced qualities were also considered.

Conclusion

Always of utmost importance to communication, intelligibility becomes an urgent feature when a learner needs to enter the workforce. Working as a teacher educator in the classroom, I have noticed a need in the teaching community in which I work to aid Hmong learners to increase their intelligibility before looking for a job. One aspect anecdotally noted as a challenge is pronunciation, and more specifically, the articulation of syllable-final consonants. To my knowledge, there is no empirical research guiding teachers to effectively aid Hmong learners in increasing their intelligibility in the area of pronunciation. To lay the groundwork for future classroom applications, my research asks: Which consonants do Hmong ESL learners delete or replace syllable-finally in English?

To frame the need and the context for this research, Chapter Two, Literature Review, will discuss literature related to non-native pronunciation and its effect on the speaker's intelligibility, intolerance by the listener and place of pronunciation instruction in the classroom. I will also describe research conducted on English Language Learners' (ELL) management of syllable-final consonants, and finish with an overview of English language syllable-final consonants and Hmong phonology as it relates to syllabification, specifically syllable-final consonants. In Chapter Three I outline the methodology of my research. I describe the collection of data, the setting, participants and procedures. In the fourth chapter, Results, an analysis of the study findings is provided using a quantitative, descriptive statistics model. In Chapter Five, Conclusion, I discuss the impact of the findings to the ESL teaching field and areas for further research.

CHAPTER TWO: LITERATURE REVIEW

It has been anecdotally noted that many Hmong speakers learning English delete syllable-final consonants. This form of syllable simplification often leads to speech which is unintelligible, leaving the speaker and listener struggling to communicate.

Unintelligibility results not only in a breakdown of communication, but can also isolate and stigmatize a speaker (Parrino, 1998). The goal of the present research is to identify which English syllable-final consonants are most problematic for Hmong speakers and the strategies they use to simplify the challenging consonants. For this study, I am concentrating on deletion and replacement simplification strategies. To frame the need for this type of research, I reviewed pertinent studies conducted in the field. I will, citing and drawing on these studies, discuss the impact of pronunciation instruction in the ESL classroom and then investigate how linguistic errors can affect intelligibility and communication. I will then contrast English language phonology and Hmong language phonology as it deals with syllable-final consonants and review common syllable simplification strategies.

Importance of Pronunciation Instruction in the Classroom

Views regarding the place of explicit pronunciation instruction in the second language classroom have varied over time. Pronunciation instruction was a central part of

second language teaching in the 1940s until the latter part of the 1960s when the value of explicit pronunciation instruction came into question and practice waned. A revival of interest in targeted pronunciation instruction arose in the mid-1980s, which continues today (Morley, 1991). Many researchers and language experts argue that pronunciation must occupy as ubiquitous a place in curriculum as skills such as grammar and vocabulary in order to truly enhance a learner's communicative competence (Fayer & Krasinski, 1987; Morley, 1991; Celce-Murcia, Briton, and Goodwin, 1996; Derwing, Munro & Wiebe, 1998; Chela-Flores, 2001; Sliveira, 2002; Hahn, 2004).

While this interest in pronunciation instruction is very much present, it does not translate into having an impact on the average curriculum (Derwing & Munro, 2005). Teachers tend to use pronunciation sporadically and have difficulty knowing how to integrate it into courses. This is troubling because in keeping with the changing tide toward a communicative model, pronunciation has been seen more and more as an essential component of learning English (Morley, 1991; Derwing, 2003). A curriculum void of pronunciation instruction may leave a student lacking in his or her ability to communicate effectively. In order to incorporate pronunciation successfully, more research is needed to inform instructor resource texts and teachers on valuable, effective pronunciation instruction (Derwing & Munro, 2005). Research such as the present study may contribute a small part in helping to lay a foundation for future classroom application research.

A question that arises frequently with the teachers I advise is: Will pronunciation instruction aid my learners in becoming more intelligible? The body of research focused on the efficacy of pronunciation instruction in the ESL classroom is relatively small, and because of that, the wide range of issues and classroom situations cannot all be accounted for. Most studies reveal results showing that a purposeful inclusion of pronunciation in the classroom can improve learners' intelligibility (Derwing, Munro & Wiebe, 1997; Derwing, Munro & Wiebe, 1998; Sliveira, 2002). Others are ambiguous as to the impact of pronunciation instruction (Perlmutter, 1989; Macdonald, Yule & Powers, 1994).

Derwing, Munro & Wiebe (1998) show that using a balance of pronunciation approaches in the ESL classroom has the most impact on learners' intelligibility. In a study designed to determine the efficacy of teaching segmentals, suprasegmentals or no pronunciation instruction at all, Derwing et al. studied three groups of ELLs, one group receiving no explicit pronunciation instruction, while the remaining two groups were given different types of pronunciation instruction for eleven weeks. Of the two groups given pronunciation instruction, one studied only segmentals and the other focused on suprasegmentals. The researchers found that the two groups receiving pronunciation instruction were more intelligible over time than the group receiving no pronunciation instruction. No real difference was found between the two groups receiving pronunciation training, resulting in the researchers calling for a diverse or multidimensional approach to pronunciation instruction. The value of this study lies not only in data concerning what

type of pronunciation instruction is effective, but overall it casts a spotlight on the importance of an integrated pronunciation component in ESL curriculum.

Studies to Support Targeted Pronunciation Instruction

While Derwing et al. (1998) take a wide view of pronunciation, Sliveira (2002) gives evidence of pronunciation instruction efficacy with one specific feature. In reaction to Brazilian learners' tendency to use epenthesis when attempting word-final consonants, Sliveira designed and implemented targeted pronunciation instruction. The instruction she designed was integrated into the curriculum using the Celce-Murcia et al. (1996) communicative framework for teaching pronunciation and then taught for eleven weeks. Comparing pre- and post-tests, Sliveira found that the experimental group, receiving explicit instruction on word-final consonants, decreased their rates of epenthesis significantly. The control group, receiving no explicit pronunciation instruction, showed a small decrease in epenthesis in half of the participants, while the other half remained the same or demonstrated an increase in rate of epenthesis. These results indicate for some participants that the absence of pronunciation instruction may allow for a shift away from the target feature.

In another study showing promising gains with targeted instruction, Perlmutter (1989), discusses the findings of an intervention program designed for International Teaching Assistants (ITA). Twenty-four NNS participants were recorded giving one minute discussions on topics determined by the researchers. Each NNS was recorded twice with a six-month interval during which they participated in the intervention

program to enhance their pronunciation. Native English speakers (NS) then rated the NNS' intelligibility and found them significantly more intelligible after 6 months in the intervention program. Unfortunately, the NNS participants were initially recorded soon after first arriving in the U.S., and the study did not have a control group. This gives way to speculation that the NNS' pronunciation improved by way of living and working in the U.S., surrounded by the target language.

Even with the results found in the three studies above, I work with those who believe that their learners' pronunciation is never going to change and who are dubious of suggestions to integrate pronunciation. Can a learner's pronunciation improve even after significant time spent in the L1 environment? There are beliefs that learners who have been speaking a second language for some time will develop "fossilized" speech (Selinker & Lamendella, 1980) and will retain any linguistic errors developed in their speech. Derwing, Munro & Wiebe (1997) took this question to task and studied non-native English speakers (NNS) who had spent an average of ten years in English-speaking Canada. After a 12-week English language program with integrated pronunciation instruction, participants showed significant progress in their pronunciation abilities. Given a sufficient amount of class time and adequate instruction, ESL learners can improve their pronunciation.

Some studies do not show such significant results for pronunciation instruction. One such study is Macdonald, Yule & Powers (1994). The researchers contrasted four groups of NNS to rate the efficacy of different modes of pronunciation instruction. One

group acted as control and was given no pronunciation instruction. The remaining three modes were: drilling exercises, during which learners repeated vocabulary and phrases after the teacher; self-study with a practice tape; and an interactive “real-life” session with a NS listener during which the NS would prompt the NNS with clarification questions. None of the interventions showed significant improvement in NNS pronunciation. However, the results should not be too discouraging because the participants received instruction only once for a duration of 10 minutes (for the drilling and interactive sessions) or for 30 minutes (for the self-study session) and were analyzed twice – once right after the instruction session and once two days later. The outcome may not be a result of the type of instruction as much as it is a result of too little instruction over a short period of time.

These studies provide compelling evidence that pronunciation is a valuable component of a second language classroom. The studies that indicated the strongest link between instruction and improvement were at least eleven weeks in length. This suggests that when given ample time and applied with a purpose, targeted instruction can improve learners’ pronunciation. By illustrating which syllable-final consonants tend to be challenging for Hmong ESL learners, my present study will lay some foundation for teachers to provide Hmong learners this targeted pronunciation instruction that can be so valuable. With targeted instruction, one can improve pronunciation, but what is the impact? Do pronunciation errors really affect intelligibility?

Linguistic Errors and Intelligibility

The studies described above show that pronunciation instruction can enhance pronunciation skills, but do the learners need it? Are the linguistic errors actually hindering intelligibility? It is recognized that simply having an accent does not make a person difficult to understand. Munro & Derwing (1995) suggest that even speakers with “heavy” accents can be quite intelligible. This study took a look at the relationships between intelligibility, perceived comprehensibility and accent. Munro & Derwing define intelligibility as “the extent to which a speaker’s message is actually understood by a listener” (pg. 76). This is in contrast to comprehensibility, which the authors consider to be the ease with which a speaker is understood by a listener. To test the interactions between the three aspects, ten Mandarin Chinese native speakers were recorded describing a series of pictures in English. The participants were proficient speakers of English, but in the researchers’ estimation, “moderately to heavily accented.” Native speakers (NS) were asked to listen to the recordings twice, in two different sessions. During the first session the NS had two tasks. First, they listened and wrote word for word the descriptions of the Mandarin speakers. These transcriptions gave the researchers’ gauge for “intelligibility”. The second task was to rate each speaker as to their comprehensibility on a scale from 1 to 9 (1 = extremely easy to understand; 9 = impossible to understand). The second session required the NS to listen again, but this time to rate the speakers’ accentedness on a scale from 1 to 9 (1 = no foreign accent; 9 = very strong foreign accent). The results of this study showed that 64% of the

transcriptions made by the listeners were over 90% correct. This shows the speakers to be highly intelligible despite their moderate to heavy accents. Shown in this study is that an accent alone does not render a person unintelligible. However, there are instances where a NNS' linguistic errors do affect intelligibility (Fayer & Krasinski, 1987; Benrabah, 1997; Hahn, 2004). In cases such as these, pronunciation instruction is necessary.

Fayer & Krasinski (1987) found that when judging NNS on grammar, pronunciation, intonation, word choice, voice quality and hesitation, listeners indicated both pronunciation and hesitation to be distracting above the other factors. The researchers interpret this to mean that pronunciation errors, along with hesitation, are the most distracting from the speaker's message and are the major cause for reduced intelligibility.

Hahn (2004) investigated the importance of primary stress on native-speaker listening comprehension. Primary stress (also referred to as prominence) is defined as the element in a thought group that receives the most stress (Celce-Murcia, Briton, & Goodwin, 1996). Hahn created a study in which she recorded a speaker delivering the same lecture three different ways in English. In the first, he used native-like primary stress, in the second, he misplaced primary stress onto other elements in the thought group and in the third, used no primary stress. A group of listeners were then divided and assigned to listen to only one of the lectures. Immediately after hearing the lecture the listeners were told to write down everything they remembered from the content and were also asked to take a quiz. Of the three groups, those who listened to the lecture of the

speaker employing native-like primary stress remembered the most details and main ideas. Hahn's results show a strong link between the misuse of primary stress, a suprasegmental pronunciation feature, and a lowering of listener comprehension. Similarly, misplaced word-stress is shown to decrease intelligibility. Benrabah (1997) discussed several studies in which NS listen to NNS speech samples and reflect on what they thought they heard each speaker say. Several of the mis-stressed words elicited inaccurate answers by the listeners.

Not to be ignored is that many learners themselves see pronunciation as a significant factor in language learning. Derwing (2003) interviewed 100 intermediate-level ESL learners living in Canada as to their experiences and feelings surrounding the importance of pronunciation in their lives when speaking English. The interviewers found that 55% of the participants thought poor pronunciation had something to do with their own communication problems and that 95% would like to speak English like a native speaker. In addition to basic communication, when asked if they felt Canadians would respect them more if they had good pronunciation, 53% said yes, and when asked to give an example of a time when they were discriminated against because of accent, most participants were able to give examples of rude or angry behavior, being disregarded and being treated unjustly. Intolerance of non-native pronunciation is an additional concern teachers may have when planning pronunciation instruction. This is considered more fully below.

Non-native Pronunciation and Intolerance

Intelligibility for communication's sake is not the only reason a teacher might consider integrating pronunciation instruction into the classroom. There are many research studies demonstrating that listeners project negative qualities onto speakers when assessing non-native accents (Mulac, Hanley, & Prigge 1974; Kalin & Rayko, 1978; Callan, Gallois & Forbes, 1983; Munro & Derwing, 1995; Llorca, 2000). Reactions ranging from irritation to discrimination can befall those who have an accent or non-standard dialect (Munro & Derwing, 1995). Not only do pronunciation errors distract and influence listeners' judgments, they often have real impact on an immigrant's or refugee's life at work, school, and while going about daily business (Parrino, 1998).

Several studies ask NS to rate NNS as to their personality, intelligence or competency based solely on recorded speech samples. Using polar adjectives such as intelligent-stupid, hard working-not hardworking, trustworthy-not trustworthy, NS consistently associate NNS with negative adjectives more so than they do NS (Mulac et al., 1974; Kalin & Rayko, 1978; Callan et al., 1983; Llorca, 2000). Negative reactions such as these connected to people with accents could easily impact a NNS' job search, interactions in the community and ability to make meaningful connections with NS.

Clearly, intolerance is an issue that can affect any person with an accent that is unlike the main population. Accent elimination is not being advocated for here, rather a hope that the biases some of our learners face in the community will not be compounded or accelerated by a lack of intelligibility.

English versus Hmong Syllable Structure

When considering a learner's intelligibility, it is often helpful to regard a specific pronunciation challenge in light of the differences in phonology between the target language and the learner's L1 (Celce-Murcia et al., 1996). As stated earlier, my goal is to identify which consonants Hmong ESL learners delete or replace syllable-finally in English. To that end, I investigated English and Hmong syllable structure, which I will discuss below.

Relative to other languages, English has a complex syllable structure (Prator & Robinett, 1985). A syllable in English must have a vowel sound (V), and that vowel sound can have up to three consonant sounds (C) before it, e.g. spring (/spr-/) and scream (/skr-/), and up to four consonant sounds after, e.g. prompts (/mpts/) (Prator & Robinett, 1985). English has forty-seven possible consonant cluster combinations allowed in the syllable initial position, and one-hundred sixty nine combinations possible in the syllable final position (Prator & Robinett, 1985; Hultzen, 1965). All English singleton consonants are allowable syllable-finally except for /h/, /w/ and /y/, which occur syllable-final only as part of a diphthong (Brinton, 2000).

Most words in Hmong are made up of one syllable. Those syllables have a less complex structure than those in English. Hmong is open-syllable, with syllables made up of an optional onset consonant plus a vowel plus tone ((C)V+tone) (Bliatout et al., 1988). The phonotactic constraints of Hmong do not allow for syllable-final consonants with the exception of nasalized vowels at the end of syllables, which can be considered consonant-

like (Bliatout et al., 1988). Those new to the language may be deceived by written Hmong as it does appear to have consonants at the ends of words. The consonants at the ends of words are present only orthographically to indicate one of the eight tones of the Hmong language, and are not pronounced as consonant sounds (Bliatout et al., 1988). For example, the Hmong word for “ball” is spelled *pob*, yet is pronounced /pɔ/ with a high tone indicated by the “b”.

The differences in the syllable structures of English and Hmong may create some difficulty for Hmong ESL learners. Specifically, English allows consonants syllable-final and Hmong is an open-syllable language which does not allow syllable-final consonants. This difference may result in Hmong learners employing one or more of the syllable simplification strategies described below.

Syllable Simplification

As mentioned earlier, other teachers and I have anecdotally noted the tendency for Hmong ESL learners to delete syllable-final consonants in English. This deletion is one example of what is referred to as syllable simplification (Lin, 2001), a process in which a learner modifies a complex syllable to more closely resemble that of their L1.

The consonant-vowel syllable structure (CV) is considered to be the universal formation for a syllable (Tarone, 1980). The more consonants added to either side of the vowel, or nucleus of the syllable, the more marked the syllable structure becomes (Carlisle, 2001). There are competing thoughts as to why some language learners simplify syllables. According to Lado’s (1957) Contrastive Analysis Hypothesis (CAH),

one can make a prediction as to what errors a language learner will make by analyzing the phonotactic constraints of the learner's L1 in relation to the L2. Therefore, a learner whose L1 favors CV syllables will transfer that syllable structure and modify the more complex L2 structure to fit the phonotactic constraints of the L1. Tarone (1980) and Hodne's (1985) research suggests otherwise. Both papers discuss the possibility that it may not be language transfer that is responsible for syllable simplification as described in Lado's CAH, rather it may be a universal preference for the open syllable in learners' interlanguage despite the individual person's L1.

Both Tarone and Hodne scrutinized participant speech samples for strategies used when simplifying final consonants and consonant clusters and whether or not each token could be attributed to L1 language transfer. What the studies found was that although the majority of errors were described as due to language transfer, many errors were not classified as language transfer (from 10% to 47% depending on participant in Tarone's study, 32% in Hodne's). Tarone shows that the non-transfer errors all show a tendency to simplify the syllable to a CV structure while Hodne's results show movement toward an open-syllable pattern only 50% of the time. These studies suggest that while language transfer is certainly apparent, it does not account for all interlanguage phonology; there may also be a preference toward the open-syllable regardless of the speaker's L1 background.

Whether it is language transfer or a universal preference for the open syllable, language learners who do modify syllables often employ one or more simplification strategies, discussed below.

Syllable Simplification Strategies

When a learner's native language has a less complex syllable structure than English, they may attempt to apply their native language phonotactic rules (Celce-Murcia, Briton, & Goodwin, 1996; Lin, Y. 2001), or, as discussed in the previous section, there may be a universal preference toward CV syllable structure (Tarone, 1980; Hodne, 1985). Whether language transfer or universal preference for an open syllable, learners may simplify the syllable in various ways:

- 1) *Epenthesis* Learners may employ a strategy called epenthesis, in which a vowel or consonant sound is inserted into an existing string of sounds. When using epenthesis, ESL learners will most commonly choose to insert a vowel sound between consonant sounds or at the end of a closed syllable:
 - a. “man” /mæn/ --- /mænə/
 - b. “class” /klæs/ --- /kilæsi/
- 2) *Deletion* When using deletion, a learner drops a consonant sound in order to simplify the pronunciation:
 - a. “help” /hɛlp/ --- /hɛp/
 - b. “cat” /kæt/ --- /kæ/
- 3) *Replacement* A learner may substitute a consonant sound for another that is easier to pronounce or is allowed in their L1:
 - a. “slow” /slɔw/ --- /srow/
 - b. “drink” /drɪŋk/ --- /dwɪŋk/

4) *Reduction* When attempting a consonant cluster, the speaker drops one or more of the consonant sounds.

a. “desk” /dɛsk/ --- /dɛs/

b. “hint” /hɪnt/ --- /hɪt/

The strategies above are noted in various research studies. For instance, Spanish speakers’ use of vowel epenthesis when attempting /sC(C)/ onsets in Swedish (Abrahamsson, 1999), Chinese speakers’ use of vowel epenthesis, deletion and replacement with onset consonant clusters (Lin, 2001), Japanese speakers’ heavy use of vowel epenthesis and replacement when dealing with syllable-final consonants (Eckman & Iverson, 1993; Ross, 1994), Vietnamese speakers’ reduction of syllable-final consonant clusters (Sato, 1983), and Brazilian-Portuguese speakers’ syllable simplification using epenthesis (Sliveira, 2002).

This phenomenon does not occur only in word-final position. Carlisle (1991) examined word initial consonant clusters with the form /s/ + voiceless stop (/sp/, /st/, /sk/) and the epenthesis rates affected by the preceding linguistic environment in two studies reported together in his 1991 paper. In particular, he was interested in whether the sound preceding the initial consonant cluster was a vowel or a consonant.

The results of the first study showed that the Spanish speakers employed vowel epenthesis over 60% of the time before /s/ + voiceless stop. Also observed was that vowel epenthesis occurred significantly more when the preceding linguistic environment was a consonant. The epenthesis rates in the second study were significantly higher in instances

where the word initial consonant cluster was preceded by a word final consonant than when preceded by a vocalic environment. Both studies' results show an indication that the surrounding linguistic environment does affect syllable simplification strategies in one group of ELLs.

Epenthesis is the most often used process to adapt consonant clusters by Brazilian Portuguese speakers. Sliveria (2002) notes research (Fernandes, 1997; Rebello, 1997; Baptista & Silva Filho, 1997; Koerich, 2000) showing that native speakers of Brazilian Portuguese tend to have difficulties with word-final consonants in English. There are only four word-final consonants allowed in Brazilian Portuguese. This creates a difficulty with word-final consonants in English which contributes to a difficulty with consonant clusters as well.

Sato (1983) found cluster reduction most frequently used by Vietnamese speakers when modifying a syllable-final consonant cluster. She analyzed spontaneous speech samples of two Vietnamese participants, and aligned her findings partially with the fact that Vietnamese, as a language, does not permit consonant clusters in syllable-final position.

With a focus on word-final consonants, Chan (2006) investigated the interphonology of 12 Cantonese EFL learners. Four types of speaking tasks were implemented using all allowable word-final consonants in English. The tasks included a word list, a reading passage, pictures to discuss and an interview. Chan wanted to look into the differences in difficulty among word-final English consonants, the strategies

employed when trying to pronounce the consonants and the impact of the surrounding linguistic environment, in this case the preceding vowel, on the production of word-final consonants. Voiced obstruents (i.e. /b/, /d/, /g/) were found to have the highest error rate among the participants, with 0.1% of attempts correct, irrespective of the preceding vowel. The preceding vowel did have an effect on the correct pronunciation of final nasals (/m/, /n/ and /ŋ/) and /l/.

The above studies present a growing body of research related to syllable structure and learners' interphonology. The importance of this research goes beyond cataloging statistics and data. All of the research is a foundation that can funnel toward classroom applications. With a more precise set of challenges to work with, researchers and teachers can employ more precise instruction. This type of research is invaluable, but to date, I cannot locate an empirical study related to Hmong ESL learners' syllable structure interphonology. Hmong ESL learners are found to be unintelligible at times due to the deletion of syllable-final consonants. Targeted pronunciation instruction may help to increase levels of intelligibility, as shown in studies described above. Targeted pronunciation instruction for Hmong learners will be best designed when informed by research. This leads me again to my research focus: to identify which English syllable-final consonants are most problematic for Hmong speakers and the strategies they use to simplify the challenging consonants.

In Chapter Three, I describe the methods used in this study, the participants and how the data was compiled and analyzed. In Chapter Four, I discuss the results of the

data. Chapter Five will include a discussion of the study, implications and recommendations for further research.

CHAPTER THREE: METHODS

The purpose of this study is to identify which consonants Hmong ESL learners delete or replace syllable-finally in English. The previous chapter described research studies delineating the need for pronunciation instruction both in the ESL classroom and as a topic for research and teacher texts. Literature was discussed linking nonnative pronunciation with a lack of intelligibility and with listener irritability and negativity toward the nonnative speaker. Hmong language and English language phonology were then compared, highlighting a simpler syllable structure in Hmong compared to that of English, which may be the basis for some Hmong learners' difficulty with syllable-final consonants. Finally, syllable simplification research studies were described. The previous chapter formed a context for my study, but also helped to emphasize the gap in the current research as to applicable pronunciation research and research into the interphonology of Hmong ESL learners.

Research Paradigm

This study is best described using the quantitative paradigm of descriptive statistics research. Simply put, quantitative research shows a relationship between an independent variable and a dependent variable in a set of data (Hopkins, 2000).

Descriptive research in particular is defined by Brown and Rodgers (2002) as “any research that describes a setting or events in numerical terms” (pp. 118). Descriptive statistics research best describes my research because I am hoping to find a relationship between the type of consonant and rate of syllable-final deletion and/or a relationship between the linguistic environment and the rate of deletion.

Participants

The participants are 15 adult Hmong speakers who were identified as low-intermediate or higher level, and are enrolled at an Adult Basic Education (ABE) site in a Midwestern urban area (see Table 3.1). This level range was chosen because it was felt that the amount of vocabulary, reading and speaking in the study required a level of low-intermediate or higher. Levels were determined using the Comprehensive Adult Student Assessment System (CASAS) and teachers’ knowledge of learners’ level. The ABE site involved implements the CASAS test soon after the learner is enrolled and approximately every ten weeks after that.

The Hmong are a mountainous people of Laos, Vietnam and Thailand. In the 1960s and 1970s, they aided the American troops in the Vietnam War, and have since been persecuted in Laos. They fled, most to Thailand, and found themselves in refugee camps, many people living there for decades. Some Hmong remain in Asia, while others relocated to Western nations, many finding new homes as political refugees in the United States. The largest populations of Hmong refugees in the U.S. are in California, Minnesota and Wisconsin (Bliatout, et al. 1988).

Not all, but many, Hmong refugees who find themselves in ABE ESL classes have limited, interrupted, or no formal schooling background. This can lead to low L1 literacy skills and difficulty with formal school activities. Hmong culture has a strong background in oral tradition. Children learn through stories, watching those around them and hands-on participation in activities. This background better prepares Hmong learners for oral, kinesthetic, tactile and experiential classroom activities (Bilatout, et al. 1988).

Table 3.1
Participant Data

| Par. | Gender | Age | U.S. Arrival | Class Level | Par. | Gender | Age | U.S. Arrival | Class Level |
|------|--------|-----|--------------|-------------|------|--------|-----|--------------|-------------|
| 1 | F | 24 | 2007 | 6 | 9 | F | 30 | 2005 | 3 |
| 2 | M | 31 | 2007 | 6 | 10 | M | 33 | no date | 3 |
| 3 | M | 36 | 2008 | 6 | 11 | M | 30 | 2005 | 3 |
| 4 | M | 19 | 2004 | 6 | 12 | F | 30 | 2005 | 5 |
| 5 | M | 32 | 2004 | 6 | 13 | F | 30 | 2004 | 5 |
| 6 | F | 27 | no date | 5 | 14 | F | 37 | 2004 | 5 |
| 7 | F | 27 | 2005 | 5 | 15 | F | 27 | 2004 | 5 |
| 8 | F | 26 | 2006 | 5 | | | | | |

Setting

The context for this study is an Adult Basic Education (ABE) site in a Midwestern urban area that offers classroom-based ESL instruction at a variety of levels. The site is part of the city's public school community education department, and classes are open to adult learners of any language background. Class schedules differ in length, frequency

and time of day. At the site, a quiet room was arranged for the data collection. One person at a time, participants completed the tasks with the researcher present.

Triangulation of Data

In order to ensure verification of data, three different tasks were designed to elicit speech from participants: a word list task, a sentence list task and a spontaneous speech task. There are two ways in which the combination of these tasks facilitates verification. First, the different formats allow for different levels of formality, and second, they allow for differences in word boundaries and incidence of onsets.

Tarone (1979) found that as formality increases, so does accuracy. Eckman (1991) observed that speakers performed more accurately in word lists than they did when reading sentences and in spontaneous speech, such as conversations. The different levels of formality will allow me to cross-check participant output for contradictions or concurrences in the data.

The ability to analyze data with differences in word boundaries is important because syllable simplification can differ depending on if it occurs in connected speech or not (Celce-Murcia et al., 1996). The three tasks represent spontaneous connected speech, controlled connected speech and controlled non-connected speech. As above, this allows for a cross-check for contradictions and concurrences in the data.

Ethics

A human subjects form was submitted and was approved by a Human Subjects Research subcommittee at Hamline University. In addition, all participants signed a letter

of consent which outlined their rights as a participant in a research study. All participants, teachers, administrators and organizations remain anonymous.

Data Collection

The data collection procedure included three tasks designed to elicit syllable-final consonants from participants. The tasks were intended to provide the researcher with elicitations of all English permissible syllable-final consonants, and Using Labov's (1972) framework of stylistic variation, the tasks were designed to elicit language at different levels of formality. Consonants were presented to participants in syllable-final position in mostly monosyllabic words. Bisyllabic words were used when necessary to provide additional occurrences of syllable-final consonants in instances when there were not any other appropriate monosyllabic words available and also to facilitate a shorter list of prompts for the participants. Mono and bisyllabic words, as opposed to multisyllabic words, were chosen to assist the progression of the reading tasks. Given the absence of any studies on syllable-final consonant deletion by Hmong speakers, I chose to look only at singleton syllable-final consonants as a first step in exploring this phenomenon.

The tasks were arranged in order from least to most formal in order to obtain the most natural speech in the free speech task and avoid unintentional consciousness of form transferred from the controlled tasks. The three tasks are described below:

1. Free-speech story telling/discussion. In this task, the participants were asked to describe and discuss with the researcher a Hmong traditional embroidered story cloth called a paj ntaub. The participants were also free to talk about any subject to which

the discussion led. The basic story illustrated by the paj ntaub contains vocabulary with syllable-final consonants, although there was no guarantee of how many or which words the participants would use. Descriptions were recorded with a high-quality recording device. This task served as a sample of participants' speech, free of orthographic cues. It also served as a vehicle for participants to use more natural, conversational speech. The participants were given time to look and think about the paj ntaub before starting the task. This provision serves to reduce irregular speech not related to fluency but related instead to unpreparedness.

2. Reading sentences. Participants read aloud a series of 40 written sentences containing monosyllabic and bisyllabic words with 165 consonants in syllable-final position (Appendix B). Sentences were read one by one and recorded with a high-quality recording device. The key words incorporated come from a word list Chan (2006) used in a similar study with Cantonese ESL learners. Participants read five practice sentences to rehearse the process and to check volume level on the recording.
3. Reading isolated words. Participants read aloud a list of 39 monosyllabic and bisyllabic words containing 53 syllable-final consonants (Appendix A). The list contains words using all English permissible syllable-final consonants. The word list is a modified version of the list Chan (2006) used in a similar study with Cantonese ESL learners. Participants read five practice words to rehearse the process and to check volume level on the recording.

Data Analysis

The data collected from the Hmong participants was transcribed and analyzed by the researcher to determine which consonants Hmong ESL learners delete or replace syllable-finally. When analyzing the data, simplification of the syllable-final consonants was considered relevant, but mispronunciation of other phonemes was disregarded for this study.

I started by listening to the participants' speech samples and typing what I heard. If a phrase, word or section was unintelligible to me after listening several times, I left it out and typed *unintelligible*. I then highlighted on the transcriptions where syllable-final consonants should be articulated. I listened again several times to determine if the syllable-final consonants were articulated, deleted or replaced, and marked as such on the transcription. I marked instances as deletion only when I clearly heard a vowel sound syllable-finally where a consonant sound should have been articulated. At times, it was not clear to me what was happening to the syllable-final consonant. There were times when the consonant sounded partially uttered (as an unreleased /p/, /t/ or /k/ might sound), or a sound was uttered syllable-finally, but I could not determine which sound. In the cases when I could not determine the sound being used, I removed that token completely from the data. In cases when the consonant was partially uttered, but the correct phoneme, I categorized it as *articulated*. If the sound was partially uttered but the wrong phoneme, I categorized it as *replaced*.

In order to determine the most often deleted and replaced syllable-final consonants, frequency and percentage rates of deletion were calculated for each of the 21

North American English syllable-final consonants, as shown in Table 3.2. Frequency and percentage rates were then compared among the consonants. This was first determined for each of the three tasks separately, and then for the data from all tasks as a whole.

Consonants were also considered by manner of articulation and state of the glottis to determine if a type of consonant rather than an individual consonant was more frequently deleted or replaced. Consonants were grouped into stops, fricatives, affricates, nasals, and approximants, and also voiced and voiceless. The frequency and percentage rates of deletion and replacement were calculated for each manner of articulation, and then compared across the five manners. Voiced and voiceless consonants were compared to each other as to their deletion and replacement rates, and also considered when analyzing the data.

Table 3.2
Allowable Syllable-final Consonants in North American English

| Stops | Fricatives | Affricates | Nasals | Approximants |
|-------|------------|------------|--------|--------------|
| /b/ | /v/ | /tʃ/ | /m/ | /l/ |
| /p/ | /f/ | /tʃ/ | /n/ | /r/ |
| /d/ | /ð/ | | /ŋ/ | |
| /t/ | /θ/ | | | |
| /g/ | /z/ | | | |
| /k/ | /s/ | | | |
| | /ʒ/ | | | |
| | /ʃ/ | | | |

Conclusion

In this chapter, I described the participants involved in the study, fifteen Hmong learners ranging in age from 19 to 37, who attend low-intermediate and higher ABE ESL classes. I also explained the three tasks participants completed: a spontaneous speech task, reading sentences and reading words. For each participant, the tasks were recorded and analyzed for syllable-final deletion and replacement by individual phoneme, by manner of articulation and by state of the glottis. Ethics and triangulation of data were discussed, as well as the research paradigm of descriptive statistics. The next chapter, Results, will provide in detail the deletion and replacement rates for the three tasks overall and for each task individually. These results will be considered by individual syllable-final consonant, by manner of articulation and by state of the glottis.

CHAPTER FOUR: RESULTS

The purpose of this study was to identify which consonants Hmong ESL learners delete or replace most frequently syllable-finally in English. The present chapter, Results, discusses the outcomes of the data collected through three speaking tasks: a word list, a sentence list and a spontaneous speech task. Originally, I was analyzing the data only for deletion, but as I listened to the speech samples I noted syllable-final consonant replacement occurring as well. I decided to analyze the data for replacement too. Deletion and replacement will be presented here first as two separate threads and then as compared to one another.

The data for this study are presented as follows. First, syllable-final consonant deletion results of the three tasks as an entire set. Next, I present deletion data by state of the glottis. Following this, I present results for each of the three tasks individually, the word list, the sentence task, and spontaneous speech task. For the three tasks, each set of data was analyzed for deletion rates for individual consonants and also by manner of articulation. Following the deletion results is a discussion of noteworthy findings therein. Then, I present findings pertaining to replacement. As with deletion, I present first the overall replacement data. Next, I present replacement data by the state of the glottis and then by the three tasks. As with deletion, I analyzed the results both by individual

phonemes and by manner of articulation. Following is a discussion of the replacement results. Finally, I discuss trends and results for deletion and replacement as compared to one another in terms of specific consonants and formality of task.

Results Overall

The participants completed three oral tasks each, including a list of 39 words containing 53 syllable-final consonants, a list of 40 sentences containing 165 syllable-final consonants and a spontaneous speech sample. The sentence and word list readings of two participants, 11 and 15, were excluded from the study because of inadequate reading skills which rendered their samples invalid. The results of the spontaneous speech samples for these two participants were retained.

Across the three tasks, 5644 tokens were recorded with an accuracy rate of 87%. The word task garnered 689 tokens, with an accuracy rate of 83%. The sentence task had 1980 tokens and an accuracy rate of 83%. Finally, the spontaneous speech task provided 3304 tokens and had an accuracy rate of 91%.

Overall Deletion Results

7% of the syllable-final consonants were deleted over the three tasks. The three phonemes with the highest rates of deletion were /d/ (24%), /g/ (18%), and /v/ (17%), as shown in Table 4.1.

Table 4.1
Overall Deletion Rates

| Phoneme | Total attempted | Total deleted | Percentage deleted | Phoneme | Total attempted | Total deleted | Percentage deleted |
|---------|-----------------|---------------|--------------------|---------|-----------------|---------------|--------------------|
| /d/ | 195 | 46 | 24% | /z/ | 425 | 22 | 5% |
| /g/ | 132 | 24 | 18% | /s/ | 284 | 13 | 5% |
| /v/ | 263 | 45 | 17% | /p/ | 135 | 5 | 4% |
| /b/ | 95 | 13 | 14% | /ʃ/ | 136 | 5 | 4% |
| /k/ | 325 | 43 | 13% | /m/ | 420 | 12 | 3% |
| /ʒ/ | 65 | 8 | 12% | /l/ | 318 | 7 | 2% |
| /t/ | 510 | 62 | 12% | /n/ | 885 | 19 | 2% |
| /š/ | 146 | 15 | 10% | /ŋ/ | 310 | 4 | 1% |
| /θ/ | 81 | 8 | 10% | /r/ | 591 | 6 | 1% |
| /ð/ | 70 | 5 | 7% | /tʃ/ | 96 | 0 | 0% |
| /f/ | 162 | 11 | 7% | Total | 5644 | 373 | 7% |

Overall Deletion and Manner of Articulation

Looking at the data by manner of articulation, stops are the most frequently deleted type of syllable-final consonant at 14%. At 8%, fricatives are the next most frequently deleted, as shown in Table 4.2.

Table 4.2
Overall Deletion Rates by Manner of Articulation

| Manner of articulation | Number attempted | Number deleted | Percentage deleted |
|------------------------|------------------|----------------|--------------------|
| Stops | 1392 | 193 | 14% |
| Fricatives | 1496 | 127 | 8% |
| Affricates | 232 | 5 | 2% |
| Nasals | 1615 | 35 | 2% |
| Approximants | 909 | 13 | 1% |

State of the Glottis and Deletion

Overall, participants deleted voiceless consonants (/p, t, k, f, θ, s, š, ʃ/) 9% of the time, 33% more frequently than voiced (/b, d, g, v, ð, z, ž, ĵ, m, n, ŋ, l, r/) at 6%, as shown in Figure 4.1. Voiceless consonants were deleted 2% of the time in the word task, while voiced were deleted 5%. The voiced and voiceless deletion rates were equal in the sentence task, at 8%. In the spontaneous speech task, participants deleted voiced consonants 4% of the time and voiceless consonants 13%.

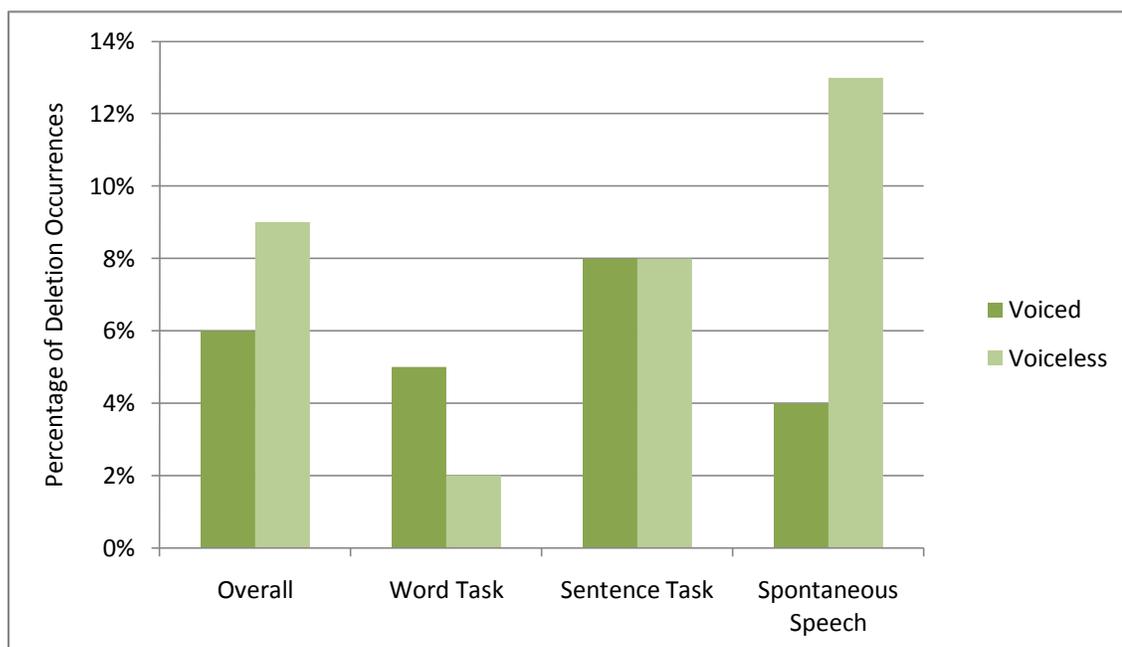


Figure 4.1: State of the Glottis – Deletion

Word Task – Deletion

Participants read a list of 39 words which contained 53 syllable-final consonants. The overall deletion rate for syllable-final consonants on the word task was 4%. In addition, nearly half of the phonemes had a 0% deletion rate in this task. The phonemes that participants did delete with most frequency were /n/ 15%, /z/ 12%, and in a tie for third, /d/, /t/, and /v/ all with a 10% deletion rate, as shown in Table 4.3.

Table 4.3
Word Task Deletion Rates

| Phoneme | Total attempted | Total deleted | Percentage deleted | Phoneme | Total attempted | Total deleted | Percentage deleted |
|---------|-----------------|---------------|--------------------|---------|-----------------|---------------|--------------------|
| /n/ | 52 | 8 | 15% | /p/ | 26 | 0 | 0% |
| /d/ | 26 | 3 | 12% | /k/ | 26 | 0 | 0% |
| /t/ | 26 | 3 | 12% | /θ/ | 13 | 0 | 0% |
| /v/ | 26 | 3 | 12% | /s/ | 26 | 0 | 0% |
| /z/ | 39 | 4 | 10% | /ʒ/ | 26 | 0 | 0% |
| /g/ | 13 | 1 | 8% | /ʃ/ | 39 | 0 | 0% |
| /ð/ | 26 | 2 | 8% | /tʃ/ | 26 | 0 | 0% |
| /b/ | 26 | 1 | 4% | /m/ | 26 | 0 | 0% |
| /f/ | 39 | 1 | 3% | /ŋ/ | 52 | 0 | 0% |
| /j/ | 52 | 1 | 2% | /l/ | 52 | 0 | 0% |
| /r/ | 52 | 1 | 2% | Total | 689 | 28 | 4% |

Word Task and Manner of Articulation

Stops and nasals were deleted most frequently in the word task at 6%, 33% more often than the next most frequently deleted manner, fricatives, at 4%, as shown in Table 4.4.

Table 4.4
Word Task Deletion Rates by Manner of Articulation

| Manner of articulation | Number attempted | Number deleted | Percentage deleted |
|------------------------|------------------|----------------|--------------------|
| Nasals | 130 | 8 | 6% |
| Stops | 143 | 8 | 6% |
| Fricatives | 234 | 10 | 4% |
| Affricates | 78 | 1 | 1% |
| Approximants | 104 | 1 | 1% |

Sentence Task – Deletion

In the sentence task, participants read a series of 40 sentences containing 165 syllable-final consonants. Deletion occurred 8% of the time, double the 4% found in the word task. At 40%, /d/ was deleted 40% to 55% more frequently during the sentence task than the next five most frequently deleted, as shown in Table 4.5. The deletion rate of /d/ in the sentence task is also considerably higher than /d/ in the word task (10%). Also of interest is that while /ž/ (22%) is among the most frequently deleted in the sentence task, its voiceless counterpart, /š/, was not deleted at all in the sentence task, as shown in Table 4.5.

Table 4.5
Sentence Task Deletion Rates

| Phoneme | Total attempted | Total deleted | Percentage deleted | Phoneme | Total attempted | Total deleted | Percentage deleted |
|---------|-----------------|---------------|--------------------|---------|-----------------|---------------|--------------------|
| /d/ | 60 | 24 | 40% | /m/ | 108 | 8 | 7% |
| /g/ | 60 | 14 | 23% | /ŋ/ | 72 | 4 | 6% |
| /ʒ/ | 36 | 8 | 22% | /s/ | 84 | 3 | 4% |
| /v/ | 84 | 18 | 21% | /z/ | 240 | 8 | 3% |
| /k/ | 84 | 16 | 19% | /r/ | 120 | 3 | 3% |
| /b/ | 60 | 11 | 18% | /n/ | 288 | 2 | 1% |
| /θ/ | 48 | 7 | 15% | /ŋ/ | 108 | 1 | 1% |
| /f/ | 60 | 8 | 13% | /ʃ/ | 72 | 0 | 0% |
| /t/ | 120 | 9 | 8% | /tʃ/ | 60 | 0 | 0% |
| /ð/ | 36 | 3 | 8% | /l/ | 108 | 0 | 0% |
| /p/ | 72 | 5 | 7% | Total | 1980 | 152 | 8% |

Sentence Task and Manner of Articulation

Stops were the most frequently deleted syllable-final consonants in the sentence task. They were deleted 17% of the time, while the next highest deletion rate was for fricatives at 8%, as shown in Table 4.6. The deletion of stops in the sentence task is 65% more frequent than the deletion of stops (6%) in the word task, even though along with nasals, stops are the most frequently deleted manner in the word task, as shown in Table 4.4.

Table 4.6
Sentence Task Deletion Rates by Manner of Articulation

| Manner of articulation | Number attempted | Number deleted | Percentage deleted |
|------------------------|------------------|----------------|--------------------|
| Stops | 456 | 79 | 17% |
| Fricatives | 660 | 55 | 8% |
| Affricates | 132 | 4 | 3% |
| Nasals | 504 | 11 | 2% |
| Approximants | 228 | 3 | 1% |

Spontaneous Speech Task – Deletion

In the spontaneous speech sample, participants were asked to describe a paj ntaub, a traditional Hmong story cloth, and then engage in a short conversation with the researcher. The topic of conversation depended on what the participant said previously about the paj ntaub. The number of syllable-final consonants also depended on the participants' choice of words.

The results of the spontaneous speech samples yielded a deletion rate of 7% overall, down from sentences (8%). Most frequently deleted syllable-final consonants were /š/ (55%), /j/ (33%), and /b/ (25%), as shown in Table 4.7. Of note is that during the word and sentence tasks, /š/ was not deleted at all, /j/ was 2% for words and 6% for sentences, and /b/ was 4% for words and 18% for sentences.

Table 4.7
Spontaneous Speech Task Deletion Rates

| Phoneme | Total attempted | Total deleted | Percentage deleted | Phoneme | Total attempted | Total deleted | Percentage deleted |
|---------|-----------------|---------------|--------------------|---------|-----------------|---------------|--------------------|
| /ʃ/ | 33 | 18 | 55% | /s/ | 185 | 12 | 6% |
| /j/ | 9 | 3 | 33% | /l/ | 172 | 7 | 4% |
| /b/ | 4 | 1 | 25% | /f/ | 66 | 2 | 3% |
| /d/ | 115 | 20 | 17% | /m/ | 347 | 9 | 3% |
| /g/ | 54 | 9 | 17% | /n/ | 603 | 10 | 2% |
| /v/ | 177 | 26 | 15% | /ŋ/ | 184 | 3 | 2% |
| /t/ | 409 | 58 | 14% | /r/ | 491 | 2 | 0.4% |
| /k/ | 243 | 35 | 14% | /ð/ | 5 | 0 | 0% |
| /z/ | 150 | 10 | 7% | /ʒ/ | 0 | 0 | 0% |
| /p/ | 33 | 2 | 6% | /tʃ/ | 8 | 0 | 0% |
| /θ/ | 16 | 1 | 6% | Total | 3304 | 228 | 7% |

Spontaneous Speech and Manner of Articulation

Considered by manner of articulation, affricates were most frequently deleted during the spontaneous speech task, at 18%. The next most frequently deleted manner was stops at 15%, as shown in Table 4.8.

Table 4.8
Spontaneous Speech Task Deletion Rates by Manner of Articulation

| Manner of articulation | Number attempted | Number deleted | Percentage deleted |
|------------------------|------------------|----------------|--------------------|
| Affricates | 17 | 3 | 18% |
| Stops | 858 | 125 | 15% |
| Fricatives | 632 | 69 | 11% |
| Nasals | 1134 | 22 | 2% |
| Approximants | 663 | 9 | 1% |

Manner of Articulation Overall – Deletion

Stops were in the top two most frequently deleted manners for all three tasks and overall. Of the stop consonants, however, /p/ was one that did not align with the trend. It was deleted 67% to 83% less than the other phonemes in the stops category.

Approximants (/l, r/) were never deleted more than 1% in any task. See a comparison of manners across the three tasks and overall in Figure 4.2.

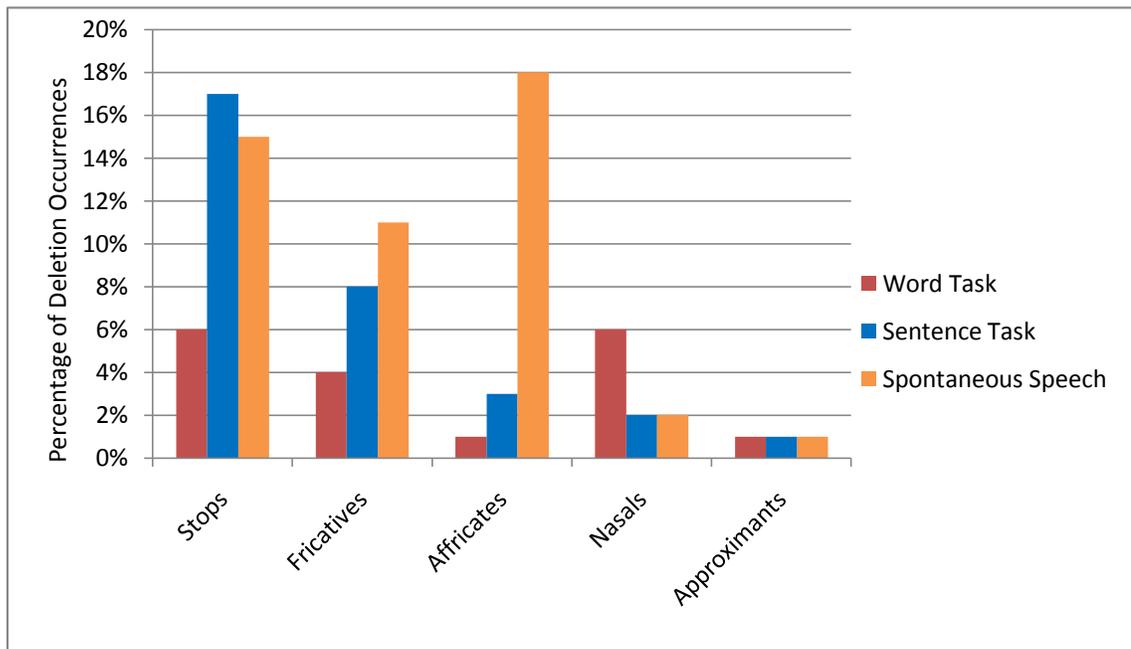


Figure 4.2: Deletion by Manner of Articulation

Deletion Rates Discussion

Several interesting deletion trends emerged from the data while considering it by task, by manner of articulation, by state of the glottis, and by specific syllable-final consonant.

Trends by Task

Overall, the word task deletion rate (4%) is half that of the sentence task deletion rate (8%) and nearly half of the spontaneous speech rate (7%), as shown in Figure 4.3. It is expected that the word task has lower percentages of error than the sentence and spontaneous speech tasks, according to Tarone (1979). Reading a list of words is more formal, therefore participants are more apt to speak slower and to be focused more

intensely on form. Spontaneous speech, the least formal of the three tasks, would be expected, then, to show an increase in deletion over the sentence task, yet it was lower.

The increase in deletion from isolated words to connected speech (the sentence task and spontaneous speech task) should be of note to teachers. When working with Hmong learners on deletion of syllable-final consonants, teachers may want to consider targeting connected speech rather than isolated words. Connected speech tends to be more rapidly spoken and less formal, and therefore more prone to error than isolated words (Tarone, 1979; Major, 1987; Eckman, 1991).

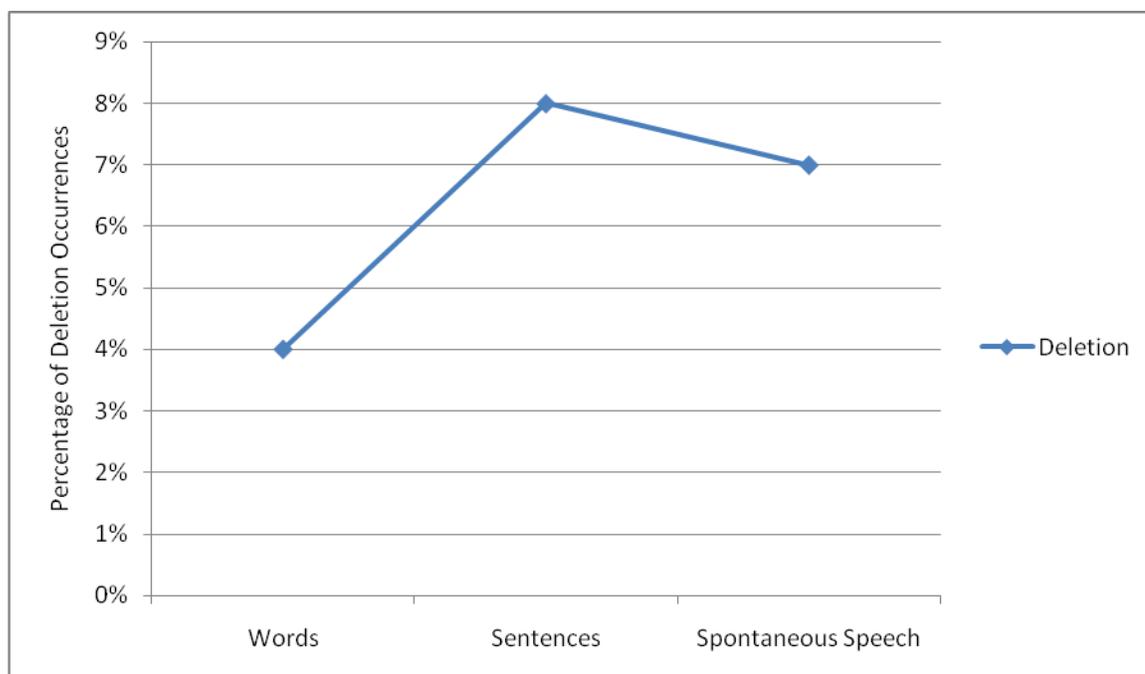


Figure 4.3: Deletion Rates by Task

Manner of Articulation

Stops were the most frequently deleted manner of articulation at 14%, and also occur in the top two most frequently deleted manners in all three tasks, as shown in Figure 4.2 above. This may indicate that syllable-final stops are a challenge for Hmong learners, and stops may warrant special attention during instruction. One phoneme in the stop category did not align with this trend, however. /p/ was deleted 67% to 83% less than other stops, and seemed not to be a challenge for the participants.

It is also interesting to note that while affricates accounted for 2% of the deletions overall, it is the most highly deleted manner for the spontaneous speech task at 18%. Furthermore, /tʃ/ accounts for all of the affricate deletions in the spontaneous speech task because /tʃ/ had a deletion rate of 0%. Syllable-final /tʃ/ may be of special concern for teachers when working with Hmong learners and spontaneous speech.

State of the Glottis

There does not seem to be much difference in deletion depending on the state of the glottis, except for in the spontaneous speech task, where participants deleted voiced consonants 4% and voiceless 13%, as shown in Figure 4.1 above.

Specific Syllable-final Consonants

Specific syllable-final consonants' deletion rates varied across task. For the word task, /n/ was deleted at 15%, 93% more often than in the sentence task (1%) and 87%

more often than in the spontaneous speech task (2%). The other nasal consonants, /m/ and /ŋ/, were not deleted at all in the word task.

In the sentence task, /d/ was deleted 40% of the time, 42% more often than the next most frequently deleted phoneme, /g/ (23%). This is 70% more than /d/ was deleted in the word task (12%) and 57% more than the spontaneous speech task (17%). Another notable finding from the sentence task is that /ʒ/ was deleted 22% of the time, while it was not deleted at all in the word or spontaneous speech task.

A striking difference across tasks is /ʃ/. It is the most frequently deleted syllable-final consonant in the spontaneous speech task at 55%, yet it was not deleted at all in either the word or sentence task. The next most frequently deleted consonant in spontaneous speech is /j/ (33%), 94% more than in the word task (2%), 82% more than in the sentence task (6%). The challenge to participants of syllable-final /ʃ/ (55%), /j/ (33%), and /b/ (25%) all rise in spontaneous speech.

Overall Replacement Results

As discussed in Chapter 2, replacement is a simplification strategy employed by language learners in which the speaker substitutes an incorrect phoneme for the correct phoneme. As I listened for the deletion of syllable-final consonants, I became aware that the use of replacement was notable, and decided to record and analyze this phenomenon as well.

For consonants as a whole group, replacement rates were 6%. This percentage is nearly the same as deletion rates noted above at 7%. Where the data diverged, however, was with specific consonant results. The most frequently replaced syllable-final consonants were /ž/, /ð/, and /θ/, at 60%, 58% and 32% respectively, as shown in Table 4.9.

Table 4.9
Overall Replacement Rates

| Phoneme | Total attempted | Total replaced | Percentage replaced | Phoneme | Total attempted | Total replaced | Percentage replaced |
|---------|-----------------|----------------|---------------------|---------|-----------------|----------------|---------------------|
| /ð/ | 70 | 42 | 60% | /t/ | 510 | 19 | 4% |
| /ž/ | 65 | 39 | 60% | /v/ | 263 | 7 | 3% |
| /θ/ | 81 | 26 | 32% | /ŋ/ | 310 | 6 | 2% |
| /b/ | 95 | 22 | 23% | /m/ | 420 | 7 | 2% |
| /g/ | 132 | 21 | 16% | /z/ | 425 | 7 | 2% |
| /p/ | 135 | 16 | 12% | /f/ | 162 | 2 | 1% |
| /tʃ/ | 96 | 11 | 11% | /s/ | 284 | 2 | 1% |
| /j/ | 136 | 15 | 11% | /n/ | 885 | 6 | 1% |
| /š/ | 146 | 15 | 10% | /l/ | 318 | 2 | 1% |
| /k/ | 325 | 33 | 10% | /r/ | 591 | 1 | 0.2% |
| /d/ | 195 | 15 | 8% | Total | 5644 | 315 | 6% |

Affricates (11%) were the most frequently replaced manner overall, followed by fricatives (9%) and stops (9%), as shown in Table 4.10. Affricates were replaced 82%

more often than they were deleted (2%). Stops were the most frequently deleted manner at 14%, 36% more often than stops were replaced.

Table 4.10
Overall Replacement Rates by Manner of Articulation

| Manner of articulation | Number attempted | Number replaced | Percentage replaced |
|------------------------|------------------|-----------------|---------------------|
| Affricates | 232 | 26 | 11% |
| Fricatives | 1496 | 140 | 9% |
| Stops | 1392 | 126 | 9% |
| Nasals | 1615 | 19 | 1% |
| Approximants | 909 | 3 | .3% |

State of the Glottis and Replacement

Overall, participants replaced voiceless consonants (/p, t, k, f, θ, s, š, tʃ/) 7% of the time, 29% more frequently than voiced (/b, d, g, v, ð, z, ž, ʝ, m, n, ŋ, l, r/) at 5%, as shown in Figure 4.4. Voiced consonants were deleted 13% of the time in the word task, while voiceless were deleted 9%. In the sentence task, voiceless consonants (9%) were replaced more frequently than voiced consonants (7%). In the spontaneous speech task, participants replaced voiceless consonants 5% of the time and voiced consonants 1% of the time.

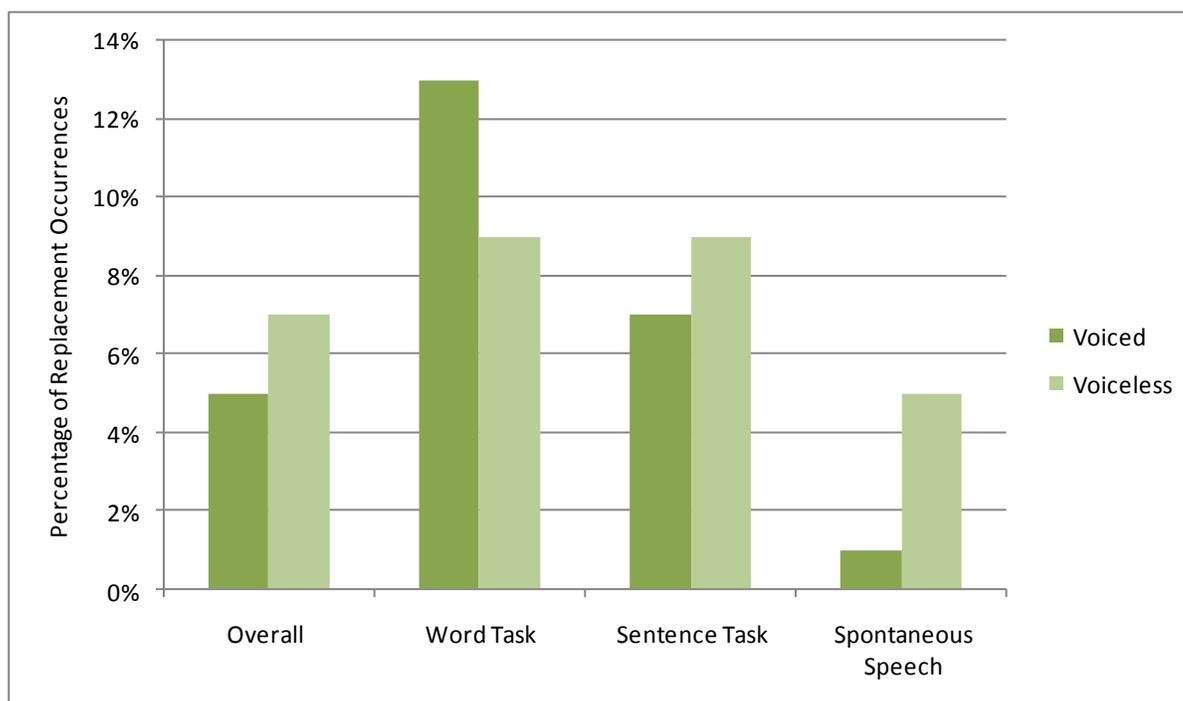


Figure 4.4: State of the Glottis – Replacement

Word Task – Replacement

Participants read a list of 39 words which contained 53 syllable-final consonants. In the word task, the participants replaced syllable-final consonants 12% of the time. /ʒ/, /θ/, and /ð/ stand out with replacement rates of 69%, 69% and 65% respectively, as shown in Table 4.11. This is compared to a 4% deletion rate in the word task. It is noteworthy that all three of these phonemes are fricatives, however, the rest of the fricative family resulted in low replacement rates.

Table 4.11
Word Task Replacement Rates

| Phoneme | Total attempted | Total replaced | Percentage replaced | Phoneme | Total attempted | Total replaced | Percentage replaced |
|---------|-----------------|----------------|---------------------|---------|-----------------|----------------|---------------------|
| /θ/ | 13 | 9 | 69% | /s/ | 26 | 1 | 4% |
| /ʒ/ | 26 | 18 | 69% | /ŋ/ | 52 | 2 | 4% |
| /ð/ | 26 | 17 | 65% | /f/ | 39 | 1 | 3% |
| /g/ | 13 | 3 | 23% | /ʃ/ | 39 | 1 | 3% |
| /d/ | 26 | 5 | 19% | /l/ | 52 | 1 | 2% |
| /k/ | 26 | 5 | 19% | /p/ | 26 | 0 | 0% |
| /b/ | 26 | 4 | 15% | /t/ | 26 | 0 | 0% |
| /j/ | 52 | 8 | 15% | /v/ | 26 | 0 | 0% |
| /tʃ/ | 26 | 3 | 12% | /m/ | 26 | 0 | 0% |
| /n/ | 52 | 3 | 6% | /r/ | 52 | 0 | 0% |
| /z/ | 39 | 2 | 5% | Total | 689 | 83 | 12% |

Word Task and Manner of Articulation

Fricatives (21%) were the most frequently replaced manner in the word task, as shown in Table 4.12. This is 81% more than fricatives were deleted (4%) in the word task. Affricates (14%) and stops (12%) are the next two most frequently replaced manners. 93% and 50% more, respectively, than they were deleted in the word task.

Table 4.12
Word Task Replacement Rates by Manner of Articulation

| Manner of articulation | Number attempted | Number replaced | Percentage replaced |
|------------------------|------------------|-----------------|---------------------|
| Fricatives | 234 | 49 | 21% |
| Affricates | 78 | 11 | 14% |
| Stops | 143 | 17 | 12% |
| Nasals | 130 | 5 | 4% |
| Approximants | 104 | 1 | 1% |

Sentence Task – Replacement

When completing the sentence task, participants replaced syllable-final consonants 8% of the time, the same rate for deletion in the sentence task. As to individual phonemes, the sentence task elicited similar replacement results to the word task. The same three consonants were by far the most frequently replaced: /ð/ (58%), /ʒ/ (53%), and /θ/ (31%), as shown in Table 4.13. Again, these phonemes are similar in that they are all fricatives, but the rest of the fricative category produced low replacement rates.

Table 4.13
Sentence Task Replacement Rates

| Phoneme | Total attempted | Total replaced | Percentage replaced | Phoneme | Total attempted | Total replaced | Percentage replaced |
|---------|-----------------|----------------|---------------------|---------|-----------------|----------------|---------------------|
| /ð/ | 36 | 21 | 58% | /v/ | 84 | 7 | 8% |
| /ž/ | 36 | 19 | 53% | /ŋ/ | 108 | 4 | 4% |
| /θ/ | 48 | 15 | 31% | /f/ | 60 | 1 | 2% |
| /b/ | 60 | 16 | 27% | /t/ | 120 | 1 | 1% |
| /g/ | 60 | 11 | 18% | /z/ | 240 | 3 | 1% |
| /k/ | 84 | 14 | 17% | /s/ | 84 | 1 | 1% |
| /p/ | 72 | 9 | 13% | /m/ | 108 | 1 | 1% |
| /d/ | 60 | 7 | 12% | /n/ | 288 | 3 | 1% |
| /š/ | 72 | 8 | 11% | /l/ | 108 | 1 | 1% |
| /tʃ/ | 60 | 6 | 10% | /r/ | 120 | 0 | 0% |
| /j/ | 72 | 7 | 10% | Total | 1980 | 156 | 8% |

Sentence Task and Manner of Articulation

Stops (13%) were the most frequently replaced manner in the sentence task, followed by fricatives (11%) and affricates (10%), as shown in Table 4.14. Stops were replaced 8% more often in the sentence task than the word task (12%). Fricatives were replaced 48% less often in the sentence task than the word task.

Table 4.14
Sentence Task Replacement Rates by Manner of Articulation

| Manner of articulation | Number attempted | Number replaced | Percentage replaced |
|------------------------|------------------|-----------------|---------------------|
| Stops | 456 | 58 | 13% |
| Fricatives | 660 | 75 | 11% |
| Affricates | 132 | 13 | 10% |
| Nasals | 504 | 8 | 2% |
| Approximants | 228 | 1 | .4% |

Spontaneous Speech Task – Replacement

Replacement in the spontaneous speech task (2%) was 83% lower than the word task (12%) and 75% lower than the sentence task (8%). Two of the most often replaced syllable-final consonants in the reading tasks, /ž/ and /ð/, were not replaced at all in the spontaneous speech task. /θ/, which was replaced 69% of the time in the word task and 31% of the time in the sentence task, was replaced 13% in the spontaneous speech task, 81% and 58% less respectively. Participants replaced most often /b/ (25%), /š/ (18%) and /p/ (15%) in the spontaneous speech task, as shown in Table 4.15.

Table 4.15
Spontaneous Speech Task Replacement Rates

| Phoneme | Total attempted | Total replaced | Percentage replaced | Phoneme | Total attempted | Total replaced | Percentage replaced |
|---------|-----------------|----------------|---------------------|---------|-----------------|----------------|---------------------|
| /b/ | 4 | 1 | 25% | /r/ | 491 | 1 | 0.2% |
| /š/ | 33 | 6 | 18% | /v/ | 177 | 0 | 0% |
| /p/ | 33 | 5 | 15% | /f/ | 66 | 0 | 0% |
| /θ/ | 16 | 2 | 13% | /ð/ | 5 | 0 | 0% |
| /tʃ/ | 8 | 1 | 13% | /s/ | 185 | 0 | 0% |
| /g/ | 54 | 4 | 7% | /ž/ | 0 | 0 | 0% |
| /t/ | 409 | 20 | 5% | /j/ | 9 | 0 | 0% |
| /k/ | 243 | 11 | 5% | /n/ | 603 | 0 | 0% |
| /d/ | 115 | 3 | 3% | /ŋ/ | 184 | 0 | 0% |
| /m/ | 347 | 7 | 2% | /l/ | 172 | 0 | 0% |
| /z/ | 150 | 2 | 1% | Total | 3304 | 63 | 2% |

Spontaneous Speech and Manner of Articulation

Affricates (6%) were the most frequently replaced manner in the spontaneous speech task, followed by stops (5%) and fricatives (2%), as shown in Table 4.16. Both the word and sentence tasks had higher rates of replacement for affricates at 14% and 10%, respectively. Affricates were also the most frequently deleted manner in the spontaneous speech task, at 18%, 67% more than replacement.

Table 4.16
Spontaneous Speech Task Replacement Rates by Manner of Articulation

| Manner of articulation | Number attempted | Number replaced | Percentage replaced |
|------------------------|------------------|-----------------|---------------------|
| Affricates | 17 | 1 | 6% |
| Stops | 858 | 44 | 5% |
| Fricatives | 632 | 10 | 2% |
| Nasals | 1134 | 7 | 1% |
| Approximants | 663 | 1 | .1% |

Manner of Articulation Overall – Replacement

The three tasks each had a different most-replaced manner of articulation. The word task's was fricatives (21%), the sentence task's was stops (13%) and the spontaneous speech task's was affricates (6%). Each of these manners was in turn another task's second most frequently replaced manner, as shown in Figure 4.5.

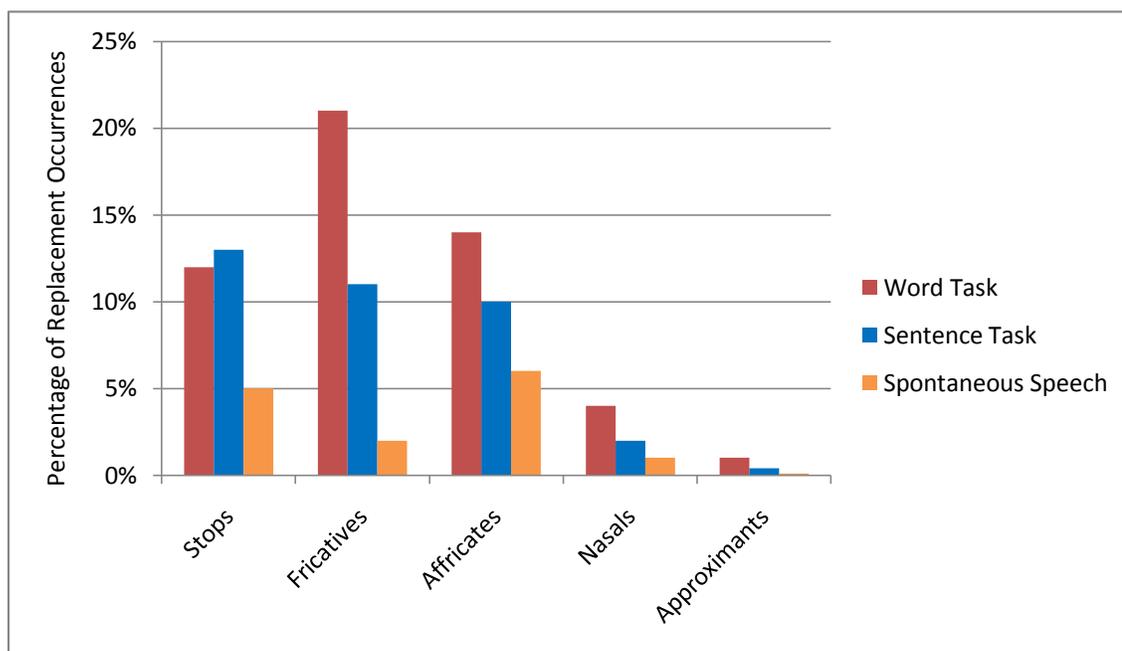


Figure 4.5: Replacement by Manner of Articulation

Replacement Rates Discussion

Several interesting replacement trends emerged from the data while considering it by task, by manner of articulation, by state of the glottis, and by specific syllable-final consonant.

Trends by Task

The word task had a replacement rate of 12%, the sentence task, 8% and the spontaneous speech task, 2%, as shown in Figure 4.6. This downward trend in errors as formality decreases is opposite of what would be expected (Tarone, 1979). It is expected that the most formal task, the reading of words, would have the least errors, the

spontaneous speech task, being least formal, would have the most errors, and sentence task somewhere in between.

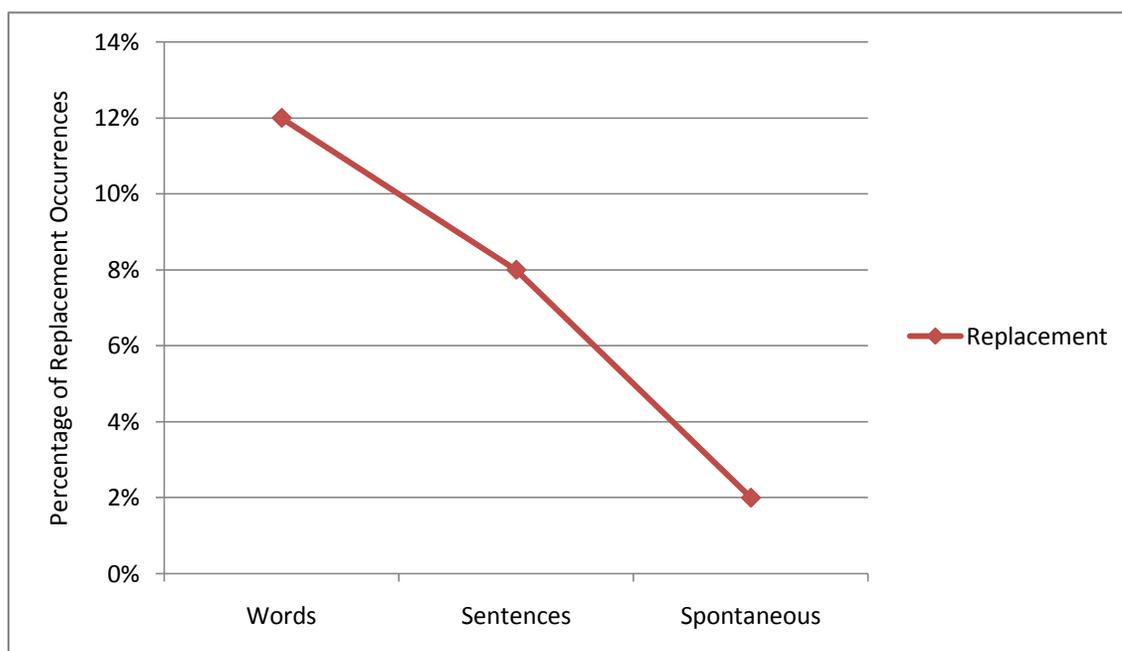


Figure 4.6: Replacement Rates by Task

I speculate that this trend may be a result of the visual reminder that text gives a reader when there is a consonant sound at the end of a syllable. The reader may not utter the correct consonant sound, but they recognize that there is something on the page, and attempt a sound, sometimes resulting in replacement. Teachers may want to note when their Hmong learners seem to be using replacement. Is it during reading or during spontaneous speech? If it tends to be the former, teachers may want to focus their replacement awareness instruction efforts on reading and phonics.

State of the Glottis

No notable trends seemed to arise from the voicing data. The biggest difference in voicing came in the spontaneous speech task with 1% voiced versus 5% voiceless being replaced.

Specific Syllable-final Consonants

The word and sentence reading tasks prompted the most replacement by participants. /ʒ/, /ð/ and /θ/ were the most frequently replaced consonants in those tasks. Because phonemes /ʒ/, /ð/, and /θ/ were so clearly the most frequently replaced syllable-final consonants in the reading tasks, they merit closer examination separately.

Reading Tasks and Syllable-Final /ʒ/

Syllable-final /ʒ/ was not attempted by any participant during the spontaneous speech task. However, it was attempted in the reading tasks, and replaced 43 times. Of those occurrences, participants replaced /ʒ/ with /j/ most frequently, 61% of the time overall, 62% in the word task, and 59% in the sentence task.

I cannot be sure about what caused these errors, but I wonder if it is due to spelling. The three words in the reading tasks with syllable-final /ʒ/ are: beige, massage and prestige. All of these words end in V+ge. Other words that I believe are more commonly used in the ESL classroom have this same ending, but are pronounced with /j/: language, page and wage, for example.

Reading Tasks and Syllable-Final /ð/

Syllable-final /ð/ was not replaced in the spontaneous speech task, but was replaced 43 times in the reading tasks. Of those incidents, /ð/ was replaced by /t/ 35% of the time. In the word task, /t/ replaced /ð/ 44% of the time, and in the sentence task, 28% of the time.

The replacement of /ð/ with /t/ is slightly unusual because more often ELL replace /ð/ with /d/, the voiced counterpart of /t/ (Celce-Murcia et al., 1996). However, the replacement may be partly explained by the similarity in points of articulation. /t/ is an alveolar sound, made with the tongue touching the alveolar ridge which is adjacent to the upper teeth where the tongue touches when making an inter-dental /ð/ sound. This proximity may make it easy for a speaker to produce an alveolar sound when attempting an inter-dental sound.

Reading Tasks and Syllable-final /θ/

Syllable-final /θ/ was attempted in each of the three tasks, and replaced 26 times overall. Of those times, participants replaced /θ/ with /t/ 62% of the time. In the word task, /t/ replaced /θ/ 78% of the time, and in the sentence task, 47% of the time. Similar to the process described above in the replacement of /ð/, the nearness in place of articulation may account for some of this replacement.

Spontaneous Speech Task and Specific Syllable-final Consonants

The most frequently replaced phonemes were not those of the word and sentence tasks. In spontaneous speech, /b/, /š/, and /p/ were replaced at 25%, 18%, and 15% respectively, as shown Table 4.15. Phonemes /š/ and /p/ are most interesting when compared to the word task because their replacement rates fall sharply to 3% and 0% respectively. This may indicate a more focused need on those phonemes when working on spontaneous speech and replacement in the classroom.

To note, the replacement percentage rates of the spontaneous speech tasks may be somewhat misleading, because of the small number of replacement overall in the spontaneous speech task. For example, /b/ leads the percentages with 25% replacement, but was actually only replaced in one instance out of four possible attempts.

Deletion versus Replacement

I will now compare and contrast the two syllable simplification strategies observed in this research project, deletion and replacement, in terms of most often simplified syllable-final consonants and task formality.

Most Often Simplified Syllable-final Consonants

When looking at the most often deleted and the most often replaced consonants, some interesting trends emerged for the three highest percentages for each strategy, as shown in Figure 4.7. The highest percentages for deletion have lower replacement rates,

and in the case of two of them, /d/ and /v/, they have notably higher rates of deletion, 66% and 82% more respectively. The most often replaced consonants have an even stronger trend, showing replacement rates that are 69% to 88% higher than the consonants' deletion rates, as shown in Figure 4.7.

This is not to say that this inverse trend continues throughout the data, but for these specific syllable-final consonants, it is notable. For the consonants showing this trend, a teacher may be able to focus his or her efforts with instruction approaches that address the simplification strategy more precisely. For instance, if a unit comprises several target vocabulary words with syllable-final /ð/, a teacher may want to use teaching strategies that reduce replacement.

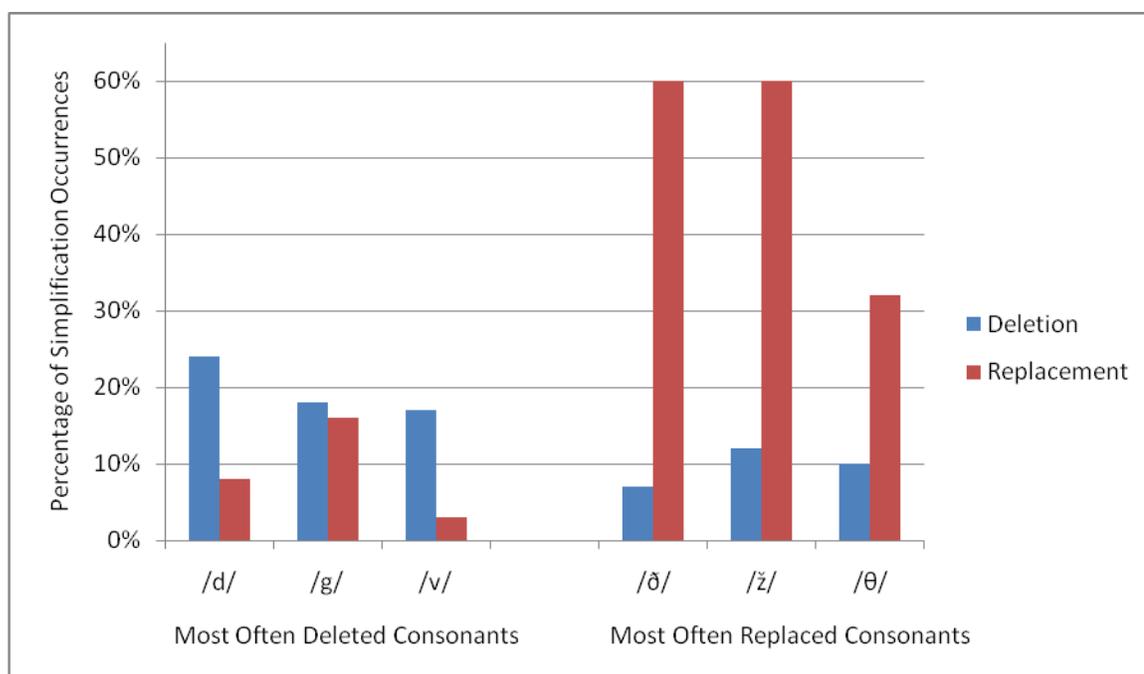


Figure 4.7: Most Often Deleted and Replaced Consonants Compared

Formality

Formality of task refers to the amount of attention pays to the language they are uttering. The continuum goes from least formal, such as spontaneous speech or conversation, to most formal, such as reading a list of words (Tarone, 1979). Tarone argues that the more formal the task, the more careful a person is with their language, and therefore, fewer language errors occur. The less formal the task, the less careful one is, and more errors occur. In this research project, the formality continuum went from the word task as the most formal, to the sentence task, which was less formal than words, to the spontaneous speech task, which was the least formal.

The deletion rates by task followed the expectation in that they rose from the word task (4%) to the sentence task (8%), and from the word task to the spontaneous speech task (7%). Deletion did not follow the expectation in that it decreased between the sentence task and the spontaneous speech task, as shown in Figure 4.8.

The replacement rates by task did not follow the expectation, and instead followed an opposite trend, with the word task having the most errors (12%), decreasing in the sentence task (8%), and decreasing again in spontaneous speech (2%), as shown in 4.8.

I believe that the participants had higher replacement rates in the word task and sentence task because they are attending to form while reading. They see a consonant at the end of the word, so are more apt to attempt a syllable-final consonant, but not always

the correct phoneme. It seems that it would still be the case, then, that the participants are being more formal with the word and sentence task, but in the case of replacement, it produces more errors rather than fewer, as Tarone (1979) predicts.

What the current data may suggest to educators is that if Hmong learners are going to make an error in spontaneous speech, it is more likely to be deletion. If they make an error in word reading, it is more likely to be replacement. Sentence reading shows no difference.

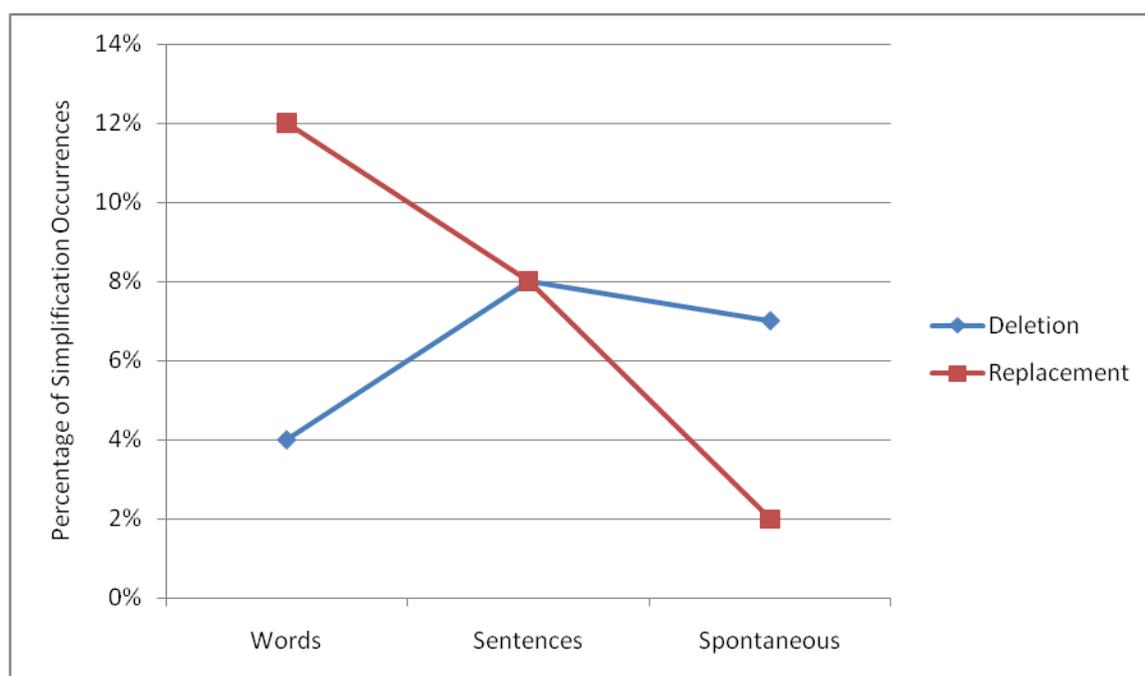


Figure 4.8: Deletion and Replacement Rates by Task

Other Influences

I also examined participant data for additional trends according to gender, age, class level and time in the U.S., as shown in Table 4.17. I sorted participants out by each

of these four factors, none resulting in striking consistencies as to whether the participant had a high or low deletion or replacement rate. The only commonality was that four of the five participants in level 6 ESL had high rates of deletion. This may be a result of higher level learners being more confident and therefore less careful with their utterances.

Table 4.17
Participant Data with Simplification Rates

| Participant | Gender | Age | U.S. Arrival | Class Level | Deletion Rates | Replacement Rates |
|-------------|--------|-----|--------------|-------------|----------------|-------------------|
| 1 | Female | 24 | 2007 | 6 | 9% | 6% |
| 2 | Male | 31 | 2007 | 6 | 7% | 4% |
| 3 | Male | 36 | 2008 | 6 | 6% | 4% |
| 4 | Male | 19 | 2004 | 6 | 11% | 6% |
| 5 | Male | 32 | 2004 | 6 | 10% | 9% |
| 6 | Female | 27 | no date | 5 | 4% | 6% |
| 7 | Female | 27 | 2005 | 5 | 4% | 5% |
| 8 | Female | 26 | 2006 | 5 | 2% | 6% |
| 9 | Female | 30 | 2005 | 3 | 12% | 7% |
| 10 | Male | 33 | no date | 3 | 3% | 6% |
| 11 | Male | 30 | 2005 | 3 | - | - |
| 12 | Female | 30 | 2005 | 5 | 14% | 5% |
| 13 | Female | 30 | 2004 | 5 | 8% | 9% |
| 14 | Female | 37 | 2004 | 5 | 2% | 2% |
| 15 | Female | 27 | 2004 | 5 | - | - |

Conclusion

This chapter has discussed the findings of my study. Findings include the results of three speaking tasks; a word task, a sentence task and a spontaneous speech task that were designed to elicit syllable-final consonants. The tasks were completed by 13 participants, with 2 additional participants completing only the spontaneous speech task. Chapter 5 is a summary of the study, a discussion of the limitations of my study, implications for the classroom and suggestions for further research.

CHAPTER FIVE: CONCLUSION

Working as a teacher educator in the classroom, I have noticed a need in the teaching community in which I work to aid Hmong learners to increase their intelligibility before looking for a job. One aspect anecdotally noted as a challenge is pronunciation, and more specifically, the articulation of syllable-final consonants. To my knowledge, there is no empirical research guiding teachers to effectively aid Hmong learners in increasing their intelligibility in the area of pronunciation. To lay the groundwork for future classroom applications, my research set out to find: Which consonants do Hmong ESL learners delete or replace syllable-final in English?

Chapter Two framed the need and the context for this research. In it I discussed literature related to non-native pronunciation and its effect on the speaker's intelligibility, intolerance by the listener and place of pronunciation instruction in the classroom. I also described research conducted on English language learners' (ELL) management of syllable-final consonants, and finish with an overview of English language syllable-final consonants and Hmong phonology as it relates to syllabification, specifically syllable-final consonants. Chapter Three outlined the methodology of my research. I described the collection of data, the setting, participants and procedures. In the fourth chapter, Results, an analysis of the study findings is provided using a quantitative, descriptive statistics model. Now, in Chapter Five, Conclusion, I will review the findings of my study, discuss

the impact of the findings to the ESL teaching field, the limitations of the study, and areas for further research.

Notable Findings

Several findings came out of the data for both deletion and replacement. Stops were the most often deleted manner of articulation at 14%. Concerning specific phonemes, /d/ (24%), /g/ (18%) and /v/ (17%) were the most often deleted syllable-final consonants. In the replacement reading tasks, /ʒ/, /ð/ and /θ/, all fricatives, were often replaced by participants in the present study. Chan (2006) found voiced fricatives, as a group, to be challenging for Cantonese learners, with only 0.1% correctly articulated. However, Chan's participants had very little trouble articulating voiceless fricatives, *except* for /θ/, which stood out with a low articulation rate. Chan's participants replaced /θ/ most often with /f/, which differs from my findings of /θ/ being replaced most often with /t/.

For these specific consonants, I found that they had deletion and replacement rates that were inversely related to each other. That is, the most highly deleted consonants (/d, g, v/) had lower replacement rates, and the most highly replaced consonants (/ð, ʒ, θ/) had lower deletion rates. The entire data set does not represent this trend overall, but for these consonants it is notable, and I believe important, because they are consonants that seemed to challenge participants.

Also relevant is the variation across task. For deletion, in the word task, /n/ was the most often deleted consonant, but very rarely (1% - 2%) deleted in the sentence task

and the spontaneous speech task. In the sentence task, /d/ was deleted 40% of the time, 70% more than /d/ was deleted in the word task (12%) and 57% more than the spontaneous speech task (17%). Another notable finding from the sentence task is that /ʒ/ was deleted 22% of the time, while it was not deleted at all in the word or spontaneous speech task. A striking difference across tasks for deletion is /š/. It is the most frequently deleted syllable-final consonant in the spontaneous speech task at 55%, yet it was not deleted at all in either the word or sentence task. As to replacement, while /ð/, /ʒ/ and /θ/ were the most often replaced overall and in both reading tasks, the spontaneous speech task results show /b/, /š/ and /p/ most often replaced.

Another variation across task is related to mode. Deletion rose in spontaneous speech, while replacement increased in the word task. This may suggest to that if Hmong learners are going to make an error in spontaneous speech, it is more likely to be deletion. If they make an error in word reading, it is more likely to be replacement. The sentence task, however, showed no difference.

Another interesting result arising from the results is that syllable-final /ʒ/ is most often replaced with /j/. I speculate that unfamiliarity plus the spelling of the words with /ʒ/ syllable-finally leads to this replacement. Beige, massage and prestige were the words containing /ʒ/, which use the same ending spelling as more often used words in ESL classrooms: page and language, which end in the /j/ sound, causing confusion.

Recommendations for Teachers

Variability occurred in the data according to task, by consonant and by simplification strategy. Because of this, one teaching approach to address Hmong learners' challenges with syllable-final consonants will not be sufficient. Teachers should consider the type of activity in which their learners are participating, which syllable-final consonants are being used and which consonants, noted above, seem to be a challenge to Hmong learners.

For instance, because of the increase in deletion from isolated words to connected speech, when working with Hmong learners on deletion of syllable-final consonants, teachers may want to consider targeting connected speech rather than isolated words. Connected speech tends to be more rapidly spoken and less formal, and therefore more prone to error than isolated words (Tarone, 1979; Major, 1987; Eckman, 1991).

Another example is that when reading, participants often replaced /ʒ/, /ð/ and /θ/ syllable-finally. This may be because they are focusing on form. Perhaps the reader sees that there is a consonant on the end of the word and is careful to pronounce a sound there, but the correct sound is not always articulated. Teachers may want to be cognizant of this while implementing different types of activities. For example, a teacher may include some accuracy exercises before a reading, targeting challenging syllable-final consonants.

Another consideration for teachers arising from my results is that the spelling for the sound /z/ may lead learners to pronounce /j/. Teachers can be careful to highlight these words and explicitly draw learners' attention to the difficulty with sound-spelling correspondences in English. This is doubly important when working with learners who have low L1 literacy skills, which many of our Hmong learners do.

Limitations

My study had several limitations. First, the number of tokens collected was not sufficiently large enough to gather a sample I felt was representative of Hmong learners' English, nor gave enough examples of all the syllable-final consonant clusters. This could be remedied with a larger sample of participants and an additional picture prompt task. More participants would be more representative of the Hmong population and collect more tokens. An additional picture prompt eliciting specific syllable-final consonants would better ensure a collection of consonants that participants did not often use in spontaneous speech and which are difficult to read due to spelling in the other tasks.

Second, I wish I had collected more background information on the participants. I collected their age, gender, year arriving in the U.S. and their class level. It would have been helpful to also ascertain their schooling background, languages spoken, employment and amount of English spoken outside of school. It would be valuable to consider these factors in relationship to participants' pronunciation performance to see if any factor or factors aligned with high rates of deletion or replacement. Factors such as employment and amount of English spoken outside of the classroom pose a particularly interesting

question about varying degrees of language input participants may be receiving.

Participants who are working in an English speaking environment, have English speaking friends or have opportunities to speak to NS may show higher rates of correct articulation due to this increased input.

Third, the inclusion of a reading component compromised my ability to accurately assess whether an error was due to pronunciation or due to spelling or unfamiliarity with the written word. The reading component also caused me to exclude the study to participants at a low-intermediate level or higher in order to ensure the participants' ability to complete the tasks. Even with that measure, two participants' reading tasks were excluded from the study because they were unable to read well enough to complete the tasks. I should have designed a task in which I used pictures to elicit some exact words. This way, I could be sure to elicit words with the syllable-final consonants I wanted without the challenge of reading.

Suggestions for Further Study

This study represents a beginning piece of the large amount of research that is needed in this area. As stated above, a study involving more participants would have represented the Hmong ESL community more accurately. A larger study would hopefully include a wide range of Hmong learners and result in a larger sample of tokens for all of the syllable-final consonants. This is especially needed in the case of consonants that had no tokens, or few tokens, in the spontaneous speech tasks of my study.

Along with a larger sample, I would add a task or tasks that utilize visuals for the purpose of eliciting exact words with specific syllable-final consonants. The paj ntaub (Hmong story cloth) was chosen to elicit spontaneous speech because I thought it beneficial to use something familiar to draw out more natural language; however I could not control for the output that would have provided richer data. I would keep the paj ntaub task to allow for free speech, along with adding another picture prompt task that instead was controlled. This would have allowed me to get a word-level sample from the participants without the need for reading.

I also believe it would be beneficial for a researcher to do a similar study with his or her own learners. The participants used in my study were not my learners, and several times, a participant came upon a word they did not know, which confused the cause for a mispronunciation. Had they been my learners, I could have introduced words into their vocabulary that could then be elicited during the tasks or I could have been more familiar with their proficiency levels, and built my tasks accordingly.

Another area for research is syllable-final consonant clusters. This study focused only on singleton syllable-final consonants, but clusters are common in English (Celce-Murcia et al., 1996), and may also pose a challenge to Hmong learners because the Hmong language has a syllable structure void of syllable-final clusters (Bliatout et al., 1988). Although I was not focusing on consonant clusters, as I was listening to the data I did note numerous simplified and deleted syllable-final consonant clusters.

Finally, in order to impact student-learning, research should be done on classroom approaches to address the challenges with syllable-final consonants noted in my study.

Dissemination of Results

Several findings should be considered when working with Hmong learners. As I visit classrooms that have Hmong learners, I will be sure to offer my results and also ask teachers about their experiences with Hmong learners' pronunciation. To reach teachers whose classrooms I do not visit, I plan on proposing a presentation to discuss my findings at my local TESOL conference and other local conferences and workshops for teachers of ESL learners. Important observations to share from my research are below.

Reflection

I enjoyed research, especially the process of data collection. I was fortunate to work with participants who were eager to take part in the study and graciously answered my questions. It was exciting to listen to the participants' speech samples and try out my knowledge of linguistics. It was a puzzle I was eager to play with each day. But I recorded far more than samples filled with tokens of phonemes to be analyzed. I heard from participants an amazing capacity to communicate, borne of an interest to educate others about their culture. I heard of great perseverance in their stories and I heard the stuff of simple day-to-day life. Life circumstances I was in awe of and stories to which I could laugh along and relate. I am lucky to have been gifted these amazing, human stories.

This process has strengthened my interest in research, especially that concerning intelligibility and pronunciation. Also, my interest increased in getting back into the ESL classroom as an instructor in addition to my coaching work. Research in this topic excites me to directly teach and test the results of my study.

Finally, I am pleased to have added an initial piece to an area of research that is greatly needed. With no empirical data to guide teachers specifically in aiding Hmong learners' pronunciation, I feel this beginning step is long overdue. I feel that this study gave us some areas to focus on for further research, which will expand our ability to address our learners' concerns.

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APPENDIX A

Task 1: Word List Containing Syllable-Final Consonants

Please read the following words:

1. after
2. beige
3. big
4. breathe
5. brown
6. cabbage
7. cage
8. cat
9. classroom
10. dishes
11. doctor
12. door
13. dream
14. English
15. fifteen
16. garden
17. give
18. hill
19. kick
20. language
21. life

22. message
23. match
24. news
25. oven
26. page
27. pass
28. path
29. push
30. rub
31. salad
32. shopping
33. sing
34. sleep
35. smooth
36. speed
37. Tuesday
38. wallet
39. watchful

APPENDIX B

Task 2: Sentence List Containing Syllable-Final Consonants

Please read the following sentences:

1. The dog is young.
2. The weather is cool in fall.
3. She is the same teacher.
4. I sleep in my room on a bed.
5. Bob has a tooth ache.
6. I sell fresh food at my job.
7. I came to school on a bus.
8. It is time for class.
9. I eat with a fork and knife.
10. I hope to learn the English language.
11. Each corn cob costs a dime.
12. I take a bath at night.
13. Leave the cup outside.
14. The fish is in the bag.
15. Turn to page five in your book.
16. My home village is in Laos.
17. Drive over the bridge.
18. Wash with soap when you bathe in the tub.
19. Mao will sing a song.
20. Give the glass to him.
21. I use cash to pay for gas.

22. Stop the truck.
23. My house has a new roof.
24. Bring me a loaf of bread.
25. The king and his wife are rich.
26. Which soup do you like?
27. The big frog is green.
28. I like the beige couch.
29. The baby's skin is smooth.
30. A shaman has much prestige in the village.
31. You cannot breathe under water.
32. Get a massage at the salon.
33. Choose a dress size.
34. The car makes a loud noise.
35. I dug a hole.
36. The cake is in the oven.
37. We learn English in the classroom.
38. My birthday is on Tuesday.
39. I'm growing cabbage in my garden.
40. I have fifteen dollars in my wallet.