Second Language Acquisition of Stress Patterns: A Study on the Effects of L1 Tamil Transfer on L2 English

Geettana Srithayananthan

A Major Research Paper submitted to the Faculty of Graduate Studies in Partial Fulfillment of the Requirements for the Degree of Master of Arts

Graduate Program in Linguistics

York University

Toronto, Ontario

August 2024

© [Geettana Srithayananthan, 2024]

ABSTRACT

Linguistic studies have observed that during second language acquisition (SLA), L2 learners tend to produce non-target like structures, resembling grammars/patterns of the learner's L1. Schwartz and Sprouse (1996) have accounted for these observations by proposing the Full Transfer Full Access Hypothesis. This hypothesis assumes that the initial state of L2 acquisition is the L1 grammar (Full Transfer). When L2 input data cannot be assigned to L1 representations, this will force re-structuring and L2 learners will have access to the same properties of Universal Grammar that were available to them during L1 acquisition (Full Access) and therefore target-like acquisition should be possible.

This study looked at the L2 acquisition of English stress patterns by L1 Tamil speakers. While English stress patterns can be predicted to some extent by rules that rely on syllable weight, Tamil has fixed stress, occurring in word-initial position. This study examined whether L1 Tamil transfer effects are observed during the acquisition of stress patterns in English and whether these effects weakened as proficiency and exposure to the L2 input data increased. The study consisted of three tasks. In Task 1, participants were asked to read aloud a list of real words in English, while in Task 2, the list consisted of pseudowords. For Task 3, participants were given two pronunciations of pseudowords, with either penultimate and antepenultimate stress, and asked to choose their preferred stress placement. All target words were tri-syllabic. The study was piloted with 13 native English speakers (control group) to account for any variability across the target words. The study then tested 14 L1 Tamil L2 English speakers, with differing levels of English proficiency – beginner, intermediate and advanced. When the results of the L2 learners were compared to the native speakers, an effect of L1 Tamil transfer was found, as L2 learners predicted stress as expected for APU words (with stress on the word-initial syllable) but not for PU words (where the second syllable was stressed) and therefore preferred word initial stress on all words. Furthermore, results showed that within the L2 groups, there was an effect of proficiency – advanced L2 learners performed most target-like, followed by intermediate and beginner speakers. These results were in line with the Full Transfer Full Access Hypothesis, showing that while effects of L1 transfer are stronger during earlier stages of proficiency, this effect weakens, and target-like performance is possible with increased proficiency and exposure to the L2 input.

Keywords: Linguistics, Second Language Acquisition, Tamil, English, Full Transfer Full Access Hypothesis, English proficiency, Stress patterns

ACKNOWLEDGEMENTS

First and foremost, I would like to thank my supervisor Dr. Liz Smeets, for her mentoring, guidance and patience in the writing of my research paper. I appreciate her continuous encouragement, check-in emails and zoom calls and all the time she has put in to revising my work. The completion of my MRP would not have been possible without her support. Thank you to my second reader, Dr. Emily Elfner, for her understanding and for her interest in this research project, and Graduate Program Coordinator, Rose Frezza-Edgecombe, for welcoming me with warmth into this program and ensuring a smooth transition throughout.

A special thank you to all the participants who took part in my study. I am grateful to each and every one of you for your interest in my work and your participation, as this study would not have been possible without you. Growing up, the Tamil community has always been close to my heart, and I am very lucky to say that I had the opportunity to work on research that means so much to me. Thank you to everyone who put in the time and effort to help with participant recruitment. A huge thank you to all my friends and colleagues who kept in touch this summer and always made sure to check in on each other. All of you, along with the amazing faculty I had the opportunity of working with, have made my experience at York University an unforgettable one.

Last but not least, a heartfelt thank you to my family for all their unwavering support throughout. To my mom, for her boundless love and confidence in me; my dad, whose profound passion for culture and languages inspired me; and my siblings, Jeivana and Jeenraj, for being my loudest cheerleaders and always encouraging me every step of the way. They’ve helped me get through this program in one piece and I wouldn’t be who I am without them.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1. INTRODUCTION

1.1 Second Language Acquisition (SLA)

In today's societies, monolingualism is becoming a rare find amidst growing sociological, political, and psychological pressures (Kijak, 2009). In many parts of the globe, although people grow up with one, two or several languages, they learn additional languages throughout their life for various needs, such as education, migration, job opportunities and daily survival (Ortega, 2013). This is known as second language acquisition (SLA) – the field of linguistics which examines the human capacity to learn languages other than the L1. L1 refers to the first language (in the case of monolinguals) or the first two/few languages (for bi/multi-linguals) which is acquired during the critical years of development (Ortega, 2013). On the other hand, L2 refers to a language learned after L1 acquisition, usually occurring during late childhood, adolescence or adulthood (Ortega, 2013).

1.2 Generative Approach to SLA

The field of second language acquisition is of interest to linguists as first language acquisition seems to occur almost naturally and effortlessly, while learners experience various difficulties with second language acquisition. Ranging from linguistic and cognitive to individual and societal barriers (Rothman and Slabakova, 2017), acquiring a L2 and trying to master a native-like proficiency can be difficult (Kijak, 2009). The current study is approached within the field of Generative Second Language Acquisition, which focuses on describing the system of L2 knowledge and how it is represented in the mind of the learner. In particular, it aims at understanding the interplay between Universal Grammar (knowledge pertaining to all human languages), L1 knowledge and L2 input (Rothman and Slabakova, 2017). One theory within the generative tradition that accounts for obstacles encountered during L2 acquisition is the Full Transfer Full Access Hypothesis.

1.3 Full Transfer Full Access Hypothesis

Linguistic research studies have observed that during Second Language Acquisition, L2 learners tend to produce non-target-like structures, often resembling grammars and patterns of the learners' L1. To account for these observations of L2 learners transferring properties of their first language to their second, Schwartz and Sprouse (1996) proposed the Full Transfer Full Access (FTFA) Hypothesis, a theory that consists of two parts. With Full Transfer, it is assumed that the initial state of L2 acquisition is the L1 grammar (Schwartz & Sprouse, 1996). As a result, during L2 acquisition, properties from the L1 can interfere with the L2, resulting in non-target like grammatical representations. Selinker (1972) explains how the patterns seen in an L2 learner's interlanguage – a linguistic system developed by learners during L2 acquisition – can be explained using patterns and grammars in the L1. However, in response to increased exposure to the L2 language, the interlanguage does not remain static. When the L1 representation cannot be assigned to the L2 input data, re-structuring of the interlanguage will be reinforced and will gradually become more target-like. As a result, L1 transfer, which may be stronger at initial stages of L2 acquisition, weakens as L2 exposure increases and L2 learners become more proficient. Through this, L2 learners continue to update their grammatical representations to become target-like (Schwartz and Sprouse, 1996). The Full Access part of the hypothesis assumes that L2 learners have access to the same principles of Universal Grammar (UG) that are available to L1 speakers during first language acquisition (Schwartz & Sprouse, 1996). This FTFA hypothesis is exemplified by White (2003) in Figure 1. Here, it is shown the initial state of L2 acquisition (S_0) is the L1 grammar (L1 S_S). When the learner is exposed to the L2 language

(L2 PLD), they move into the interlanguage (ILG_1). As the L2 learner continues to be exposed to more of the L2 input – if the L1 representation doesn't fit the L2 input – this will restructure the interlanguage (ILG_2, ILG_3….ILG_n) to become more target-like (IL S_S). During these stages, it is also assumed that the L2 learner will have access to Universal Grammar (UG), just like during first language acquisition (White, 2003). The FTFA therefore predicts that complete acquisition is possible for L2 learners.

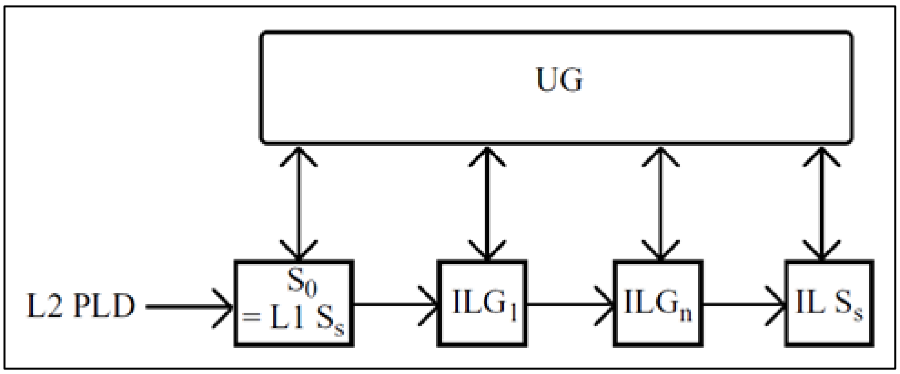


Figure 1. Full Transfer Full Access Model (White 2003, Figure 3.2)

However, persistent difficulties experienced by L2 learners may be due to other factors. One such factor involves the L2 input available to the learner and whether that is sufficient to help L2 speakers overcome L1 transfer effects. In some instances, structures transferred from the L1 may have to be unlearned and that may be difficult based on the L2 input alone. For instance, exposure to positive evidence (instances of grammatical structures) in the L2 input will aid in learning L2 representations (Kabak and Meemann, 2013). However, if there is lack of negative evidence about the L1 (examples of ungrammatical structures), it may be difficult to unlearn and overcome L1 transfer effects (Kabak and Meemann, 2013).

1.4 Acquisition of Stress

This study tests the FTFA hypothesis with regards to the second language acquisition of stress. Specifically, it will look at the L2 acquisition of English stress patterns by Native Tamil speakers. In the area of phonology, stress refers to phonetic properties that lead to the prominence or emphasis of a unit of speech (Sluijter, 1995). Stress is not a feature of all languages, but for those that have it, stress assignment rules can vary greatly across languages (Sluijter, 1995). Some languages have word stress or fixed stress, meaning that the syllable on which stress falls can be predicted by a simple rule. For instance, in languages like Tamil, Finnish, Czech and Hungarian, the stress is almost always word–initial, meaning the stress is on the first syllable of the lexical item. However, for other languages, the stress assignment rules may not be as straightforward. In the case of Spanish, which has lexical stress, stress assignment functions as lexical information. This means the placement of the stress can determine lexical meaning depending on where it is placed in the lexical item. For instance, in Spanish, the word '*pápa'* means '*potato'* when the stress is word–initial (i.e. falls on the first syllable). However, when the stress falls on the second syllable, *papá*, the meaning changes to '*dad*'. In these languages, placement of stress is crucial, as misplacing the stress position can lead to miscommunication from the intended meaning of a word. On the other hand, for languages like English, while stress assignment is not completely predictable and is partly lexical as well, particular patterns can be observed and predicted to some extent by rules. As it will be seen in Section 2.1, English stress patterns have been an area of debate.

Differing stress assignment rules between a learner's L1 and L2 become an interesting topic for L2 acquisition research. When a speaker's L1 has different rules for stress assignment than the L2, L1 transfer can lead to non-target like placement of stress in the L2 and stress placement can resemble properties of the L1. Such transfer effects may persist if positive evidence in the input is not sufficient for the L2 learner to realize that the grammar transferred from the L1 is incorrect. This can lead to a particular style of pronunciation, often referred to as an “accent” (Thomas, 2011).

The current study looked at the L2 acquisition of English stress patterns by L1 Tamil speakers. Whereas Tamil places stress consistently in word-initial position, English stress assignment is sensitive to the weight of the syllable. However, it is important to note that while English stress is syllable weight sensitive, this isn’t the only factor involved in determining stress in English. This is discussed in more detail in section 3.1. In this study, it was found that transfer from L1 Tamil affects the production of stress patterns in learners’ L2 English. Specifically, the L2 learners were able to correctly predict the stress for words with stress patterns that overlap in Tamil and English. However, when the stress didn’t fall word-initially, like Tamil, L2 learners still placed the stress on the initial syllable, suggesting evidence for L1 transfer. Additionally, it was seen that these L1 transfer effects declined with increased proficiency, in line with the FTFA hypothesis.

1.5 Organization of this Paper

The organization of the paper is as follows: Section 2 discusses the debate around English stress patterns and provides an overview of relevant previous L2 acquisition studies which have looked at the L2 acquisition of English stress patterns by speakers of varying first languages. Section 3 elaborates on the focus of the study, Tamil stress patterns, as well as recapping English stress patterns. Section 4 highlights the motivation for this study, the research questions which were investigated and the predictions that were made. Section 5 presents the experimental approach that was followed in this study and discusses the tasks that were used, the participants who were recruited for the study and how the data was analyzed. Section 6 summarizes the results from the data from Task 1, 2 and 3. Section 7 discusses the findings and the implications of the results, followed by limitations of the study and potential directions for future research studies. Lastly, the final section, Section 8, recaps the study and the main findings.

2. LITERATURE REVIEW

2.1 Debate on English Stress

English stress has been studied extensively and there has been a debate as to whether stress assignment in English is lexical or rule derived. One side of the debate argues that English stress is unpredictable and cannot be derived – rather it must be memorized. Selkirk (1980) argues that English stress is listed in the lexicon and not rule derived – meaning that rather than having stress derived from rules, English words already have metrical structure and are listed in the lexicon with an assigned stress. This is particularly seen in morphologically complex items. For these words, the stress relies on the stress pattern of the embedded lexical item – the internal morphological structure or parent form (Selkirk, 1980). For instance, for the word '*anecdotal'*, the stress falls on the initial syllable because if the internal lexical structure is looked at, the parent form '*anecdote'* also has word-initial stress (Selkirk, 1980). Hayes (1982) on the other hand, agrees that stress in English is not completely predictable, but argues that some clear patterns around syllable weight sensitivity can be observed. Liberman and Prince (1977) point out that a nonce word such as '*pódectal',* with stress on the first syllable, is neither found in the English lexicon nor is it considered natural by native speakers. This suggests that there is some underlying rule guiding stress assignment for nonce words. It can also be seen that in English, verbs and non-verbs (nouns and adjectives) have differing stress patterns accounted for by metrical patterns (Hayes, 1982). While stress on the final syllable is common in verbs, this is not the case with non-verbs due to extrametricality (which will be discussed in more detail in Section 2.2). This distinction results in minimal pairs such as '*récord'* (noun) and *'recórd'* (verb). This study followed the assumption that stress patterns in English are linked to the notion of syllable weight, which can be used to predict stress positions in nouns and other non-verbs (Hayes, 1982). The study exclusively focused on nouns and non-verbs when testing the L2 acquisition of English stress in native Tamil speakers.

2.2 Weight-sensitivity in English Stress

For nouns and other non-verbs in English, the position of stress is influenced by syllable weight, where heavy syllables tend to be longer in duration and carry stress (Garcia, 2019). Syllables are usually considered to be heavy (H) if they contain a coda consonant or a diphthong. Light syllables (L), on the other hand, have no coda consonant or are extrametrical (Garcia, 2019). A syllable is called extrametrical if it is ignored by stress rules and treated as if it were not there (Hayes, 1982). This is usually the case for word-final syllables that don't have a long vowel. These syllables are treated as extrametrical and skipped during stress assignment. As a result, there is avoidance of word-final stress in many English non-verbs (Hayes, 1982).

When stress is dependent on syllable weight, the stress patterns shown in Table 1 are observed. As discussed, because most non-verbs don't have final stress, the final syllable is considered to be extrametrical, and the penultimate syllable is what is looked at for stress assignment. The penultimate syllable is the second last syllable, while the antepenultimate is the third last syllable. If the penultimate syllable is heavy, stress is on the penultimate (PU) syllable. If the penultimate syllable is light, stress falls on the antepenultimate (APU) syllable.

Table 1. Syllable weight and stress positions in English non-verbs.

Weight of PU Syllable	PU Syllable Structure	Stressed Syllable	Example
Heavy	Coda consonant	Penultimate syllable	*a-**gén**-da,*
	Coda diphthong		*re-**cí**-tal*
Light	No coda Extrametrical	Antepenultimate syllable	***Cá**-na-da*

Table 2, made up of a data sample from the Carnegie Mellon Pronouncing Dictionary (CMUdict2014) also shows how the relationship between syllable weight and stress in English words, as discussed by Hayes (1982), can be seen even in a small subset of the lexicon. In Table 2, the percentage of words with APU stress for different syllable weight profiles is shown. Weight profiles with a light penultimate syllable (HLL, LLL) are expected to have APU stress. In Table 2, it is seen that while HLL and LLL syllable weight profiles have a high percentage of APU stress words, this percentage nearly drops to zero for the LHL weight profile, as weight sensitivity rules predict PU stress for words with a LHL weight profile. This reflects the relationship between syllable weight and stress in English (Garcia, 2019).

Table 2. Percentage of words with antepenultimate (APU) stress for varying syllable weight profiles in a sample set of data from the Carnegie Mellon Pronouncing Dictionary (CMUdict) 2014 (Garcia 2019, Table 1).

Weight profile	Part of speech	Percentage	Example
HLL	adjective	69.54	*ábsolute* 'æb.sə.<lut>
HLL	Noun	74.17	*ábstinence* 'æb.stə.<nəns>
LHL	adjective	0.00	–
LHL	Noun	2.49	*gálaxy* 'gæ.lək.<si>
LLL	adjective	68.65	*géneral* 'dʒɛ.nə.<ɹəl>
LLL	Noun	75.05	*précedence* 'pɹɛ.sə.<dəns>

2.3 English Stress and Positional Bias

As it is seen with syllable weight sensitivity, most non-verbs in English usually have either PU or APU stress. With most words in the English lexicon being either mono, bi or tri-syllabic, along with the rule of extrametricality, the stress position ends up being word-initial. Garcia (2019) reports that according to the CMU Dictionary, words with one, two or three syllables account for 85% of the corpus. Of that, 70% of the lexicon are words with initial stress (Garcia, 2019). This is shown in Figure 2. As a result, the input appears as though English has word-initial stress, as opposed to being assigned based on syllable weight, creating positional bias (Garcia, 2019). Compared to mono and disyllabic words, for words with more than two syllables, the role of syllable weight sensitivity in English stress is more clearly seen. For instance, unlike di-syllabic words, for tri-syllabic words, when the PU syllable is heavy, the stress does not fall on the initial syllable, but rather the second syllable. To ensure that weight-sensitivity patterns were transparent, it was ensured that the target words chosen for this study were tri-syllabic.

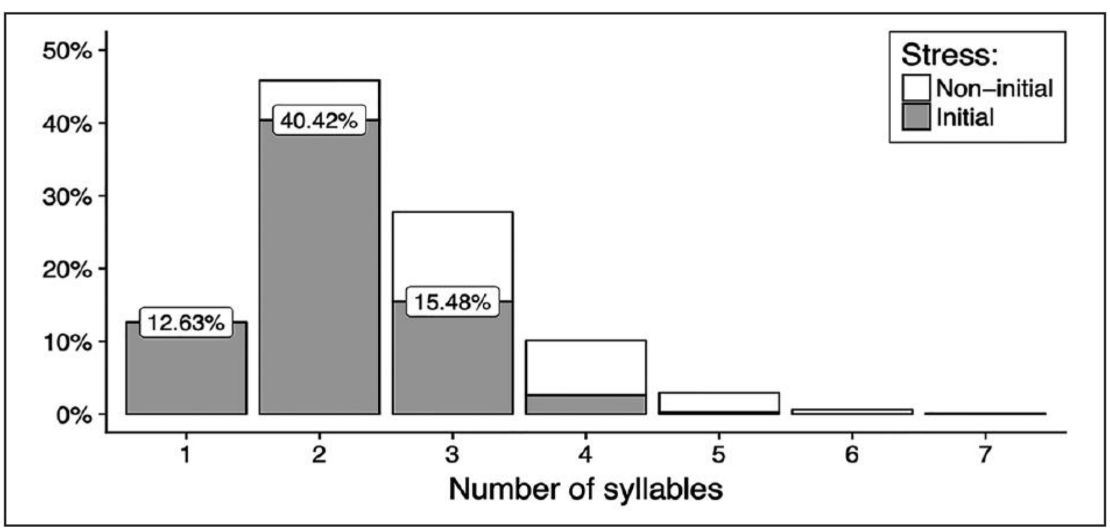


Figure 2. Percentage of words with initial vs. non-initial stress by number of syllables in the CMU Dictionary (Garcia 2019, Figure 2).

2.4 Previous Studies on the L2 acquisition of English stress

Earlier studies, which have looked at the role of L1 transfer in the L2 acquisition of stress features, have found that L2 learners tend to transfer stress assignment rules from their L1 during L2 acquisition. Whether these L1 transfer effects persist or can be overcome depends on factors such as evidence in the L2 input forcing re-structuring or increased exposure to the L2 and proficiency levels of the learners.

Within the SLA framework, one of the first studies on the L2 acquisition of stress is by Anani (1989), who looked at the acquisition of L2 English stress patterns by L1 Arabic speakers. In Arabic, the stressed syllable is determined by the syllable type. A syllable is considered to be long /L/ if its structure is CVVC, CVCC or CVV and not long /*L*/ if the structure is three to four sounds long but not one of the mentioned /L/ structures. On the other hand, a syllable is considered to be short /S/ if its structure is CV and not short /*S*/ if it is one or two sounds long and not a CV structure. Using these syllable weights, three stress patterns can be seen in Arabic. In pattern (i), stress falls on the final syllable when the ultimate (final) syllable is /L/. In pattern (ii), when the ultimate syllable is /*L*/ and the penultimate is /S/, the antepenultimate syllable is stressed. In pattern (iii), when the penultimate syllable is /S/, the penultimate syllable is stressed. It is important to make note of these patterns, as this was used as a template for the choice of English target words in the experimental design. This study was designed to investigate how Arabic native speakers learning English respond to English weight-sensitive stress patterns in words where there are corresponding phonological structures similar to patterns in Arabic. For instance, the English word '*Chinese*' and the Arabic word '*yumeen*' have the same CV-CVVC structure. Similar words to these were used as target words to see whether these Arabic speakers use weight sensitivity to predict stress in L2 English words or whether corresponding Arabic structures were used as a reference to produce stress in English. In this study, Anani tested two groups of students. The first group consisted of six undergraduate students, who were Jordanian speakers of English (JSE), studying English at the University of Jordan. The second group consisted of six native American English speakers, studying at the University of Jordan. Participants were given three lists of English test words to read out-loud. List 1 consisted of two and three syllable words, ending with a long syllable (e.g. '*lemonade*'). List 2 words followed pattern (ii) (e.g. '*industry*') and list 3 words followed pattern (iii) (e.g. '*delicious*'). Results from the study showed that while native English participants produced expected stress patterns, Jordanian participants showed effects of L1 Arabic transfer to L2 English. For instance, for three syllable English words which requires the stress to be on the antepenultimate stress, native English speakers placed the stress correctly. However, JSE speakers, with the effects of L1 transfer, showed a tendency towards stressing the final long syllable.

In another study, Archibald (1993a), looked at the L2 English acquisition of stress by L1 Polish and L1 Hungarian speakers. Both Polish and Hungarian are languages with fixed stress, meaning that the placement of stress is highly predictable. In Polish, for words with more than one syllable, the main stress falls on the penultimate syllable. For Hungarian, the stress falls on the first syllable. In this study, Archibald wanted to investigate whether speakers of L1s with fixed stress would be able to acquire weight-sensitive stress in the L2 English. This study involved 43 participants – 23 L1 Polish and 20 L1 Hungarian beginner speakers of L2 English – who were given a production and a perception task. For the production task, participants were asked to read out loud 35 words ranging from two to four syllables with APU and PU stress, while for the perception task, words were pronounced by a native speaker and participants were asked to mark its position of primary stress. For the results, Archibald discusses how the validity of the perception task as a measure of competence is disputable because "absolute beginners were receiving quite high scores" (Archibald, 1993a, p.63) for the perception task. With the production task, the results showed that regardless of the syllable weight, L1 Hungarian participants had a tendency to place the stress word-initially, while L1 Polish participants placed stress further to the right, on the penultimate syllable. These results were taken as an indication of transfer of L1 Polish and L1 Hungarian stress patterns to the L2 English. However, this study did not include more proficient L2 learners of English, and therefore it was unknown whether target-like acquisition was possible.

Another study by Archibald (1993b) looked at L1 speakers of Spanish who were acquiring English as their L2. Adding to Archibald's previous study with Hungarian and Polish L1 speakers, it is interesting to include Spanish because Hungarian and Polish are language with fixed stress, while stress in Spanish is more flexible. This gave insight as to how L1 speakers from a fixed stress language versus a more flexible stress language acquire English stress, which is derived by rules. In Spanish, although information about stress must be supplied in the lexicon, two generalizations can be made – penultimate stress is unmarked (common) in vowel final words as in "*pi**sto**la*" and final stress is unmarked (common) in consonant-final words, as in "*ci**vil***". These stress rules can also lead to marked (uncommon) pronunciations if the rightmost consonant is considered extrametrical (not counted during stress assignment). On the other hand, stress in English is weight sensitive and depends on whether the penultimate syllable is heavy or light. This study involved seven native speakers of Spanish – three lower proficiency and four higher proficiency participants – who were given two tasks, a production, and a perception task. In the production task, the participants were asked to read out loud fifty English words. In the perception task, a native speaker pronounced each word twice and the participants were asked to mark which syllable they perceived the stress to be on. The results from the study showed that errors observed in production can be due to transfer of extrametricality markings in the L1 – specifically, considering the final consonant to be extrametrical. For example, it is seen that in Spanish, [kan**i**bal] has penultimate stress because the final consonant is extrametrical. When participants were elicited in informal settings to produce the word "*cannibal*" in English, extrametricality of the final consonant was transferred from L1 Spanish, leading to penultimate stress. However, in English, if weight sensitivity had been acquired, antepenultimate stress would have been expected. Archibald also observed that with the perception task, the lower proficiency participants were less able to perceive differences between stress. However, with the advanced participants, they were able to perceive the stress differences but not yet able to put it into practice consistently, as seen with errors in the production task.

A more recent study by Jaiprasong and Pongpairoj (2020), investigated the production of English word stress by L1 Thai learners of L2 English. In Thai, stress tends to fall on the final syllable of the word. This is true especially when the word is produced in isolation, but stress may shift when the word appears in a sentence, depending on the context and what is being emphasised. For instance, when the noun /ro:ŋrián/ ('*school'*) is pronounced on its own, it follows final syllable stress. However, when it used in a sentence such as /dá:n pai ro:ŋrian/ ('*walk to school*'), stress shifts to the verb to emphasize the action of the phrase. In this study, 20 L1 Thai first-year undergraduate students learning English as their L2 were categorized into two groups – 10 participants belonging to the intermediate group and 10 belonging to the advanced proficiency group. Participants were asked to read target English words in isolation and in sentences. Results showed that production errors made by the participants can be attributed to L1 transfer of stress patterns in Thai. For example, the word *"election"* was pronounced with final syllable stress, as opposed to penultimate stress following English stress assignment rules. However, between the two proficiency groups, it was seen that the advanced group had a lower production error rate than the intermediate group, showing that L2 learners can overcome L1 transfer effects with increased proficiency.

Another recent study which looked at the acquisition of stress patterns by L2 learners of English is by Garcia (2019). In this study, L1 speakers of Portuguese and Mandarin were tested for the acquisition of English stress patterns. All three languages, Portuguese, Mandarin and English, are weight-sensitive languages. The goal of this paper was to examine whether L2 English learners can transfer weight-sensitivity from their L1s (i.e. Portuguese or Mandarin) to predict English stress patterns, or whether positional bias of stress in English takes over the effect of weight sensitivity. The study involved three participants groups – 13 English native speakers, 24 L1 Mandarin speakers and 25 L1 Brazilian Portuguese speakers. The L2ers proficiency ranged from upper intermediate to proficient. Participants were presented with trisyllabic English nonce words in pairs of two audio recordings – one pronunciation with penultimate stress and the other with antepenultimate stress. Participants were asked to choose which recording of the two for each word sounded more natural. They were also asked to rate their level of certainty on a 6-point scale. The results from the study showed that English native speakers' response patterns to stress on the presented nonce words were influenced by weight sensitivity. However, L2 learners of English, who either spoke Mandarin or Portuguese as their L1, didn't use weight-sensitivity to determine stress patterns. Instead, the participants chose the word with initial stress, regardless of whether the penultimate syllable was heavy or not. From these findings, Garcia concluded that although weight-sensitivity is present as a stress feature in the L1s of these L2 learners of English, there was still a preference for positional bias, which implied concealing effects – meaning that in the input, stress assignment being fixed (i.e. word-initial) seemed to be more obvious and prominent to the L2 learners in comparison to being determined by weight sensitivity. Garcia also observed that even with advanced L2 learners, positional bias was being used over weight-sensitivity to predict stress in English words.

The beginning of this section looked at the debate around English stress and how it is said to be either lexical or derived from rules. Particularly, these rules are governed by weight sensitivity. The remaining of Section 2 discussed previous studies which looked at the acquisition of English stress patterns by speakers of varying L1s. Collectively, the findings from these studies showed that when stress patterns in the L1 differ from that of L2 English, there is a transfer of L1 stress into the L2. Additionally, Archibald (1993b), Jaiprasong and Pongpairoj (2020) and Garcia (2019) worked with L2 learners of differing proficiency levels. The findings from the Archibald (1993b) and Jaiprasong and Pongpairoj (2020) studies showed that although the effects of L1 transfer are stronger during earlier stages of proficiency, this weakens as learners are exposed to more L2 input and their proficiencies increase. However, it is also important to note that these previous studies included only real words. Therefore, it is possible that the target-like performance that was observed by the advanced L2 learners may have been due to correct memorization. Additionally, while no proficiency effects were attested in Garcia (2019), it was seen that advanced participants did not yet acquire the weight sensitivity cues in English.

3. BACKGROUND & CONTEXT

3.1 Overview of Study

This study adds to previous studies by examining the role of L1 transfer in the acquisition of L2 stress patterns. Building on Garcia (2019), this study will also examine weight-sensitivity during L2 acquisition and the transfer of stress patterns but differ in that the L1 of the participants is a non-weight sensitive language. It was seen in the Garcia (2019) study that although stress patterns in the L1s (Portuguese and Mandarin) are determined by syllable weight sensitivity, similar to the L2 English, L2 speakers seemed to rely heavily on positional bias. Participants were assigning stress word-initial rather than according to the weight of the syllable, despite having an L1 that is weight sensitive. This is due to word-initial stress being very prominent in the input for the L2 learner. The current study looks at Tamil, a non-weight sensitive language with fixed word-initial stress, to test the effects of L1 transfer and examines whether these effects can be overcome with increasing proficiency and exposure to the L2 English. Tamil is an interesting L1 language to test because, unlike the languages used in the Garcia (2019) study, in the case of Tamil, L1 transfer and positional bias in the L2 English both overlap for word-initial stress, possibly making it even more difficult for the L2 learner to acquire weight sensitivity.

This study will focus on the acquisition of stress patterns in a weight-sensitive language, English, by native Tamil speakers. Tamil, belonging to the Dravidian language family, is primarily spoken in Sri Lanka and Southern India. Similar to other major languages spoken in Sri Lanka and India, such as Telugu, Malayalam and Kannada, Tamil has stress features that differ from those of English. Specifically, stress is assigned at the word-level and not influenced by weight-sensitivity (Thomas, 2011). When speakers of these languages acquire English, the L1 transfer of stress patterns is evident in their misplacement of stress for some lexical items, which in turn, is observed in their L2 spoken English. (Thomas, 2011). This misplacement of stress plays a factor in a particular style of pronunciation that is produced, which is the basis for the stemming of terms like "*Tamilish'* (Tamil-English) and *'Manglish'* (Malayalam), where L1 effects of the respective languages (Tamil and Malayalam) is seen in the L2 English (Thomas, 2011). This study will specifically look at the L2 acquisition of English stress patterns by L1 Tamil speakers. It will examine whether the L1 transfer of Tamil stress patterns in nouns influence the acquisition of stress patterns in English nouns and whether L2 speakers can overcome L1 transfer effects with increasing proficiency.

3.2 English Stress Patterns

As discussed in Section 2, there is a debate around English stress as to whether it is lexical or derived by rules. Many researchers have seen that although stress cannot be completely predictable, clear patterns can be seen (Garcia, 2019). For nouns and other non-verbs in English, it is seen that the position of the stress is influenced by syllable weight (Garcia, 2019). Keeping in mind that usually the last syllables are extrametrical (not counted towards stress assignment), if the penultimate syllable is heavy, the stress falls on the penultimate syllable. If the penultimate syllable is light, the stress falls on the antepenultimate syllable. Table 3 lists these penultimate syllable-weight pattern rules with examples.

Table 3. Weight of PU syllable and corresponding stress placement in English non-verbs.

Weight of PU Syllable	PU Syllable Structure	Stressed Syllable	Example
Heavy	Coda consonant	Penultimate syllable	co-***rré***c-tion
	Coda diphthong		*pa*-***pá***-ya
Light	No coda Extrametrical	Antepenultimate syllable	***bál***-*co-ny*

With most English non-verbs having either PU or APU stress and 85% of the English corpus accounting for words with one, two or three syllables, often times, the stress position ends up being word-initial. As a result of this positional bias, the input to the L2 learner appears as though English has word-initial stress, as opposed to being derived from syllable weight.

3.3 Tamil Stress Patterns

Tamil, on the other hand, is not a weight-sensitive language (Keane, 2006). Rather, Tamil has word-level stress, which is fixed and highly predictable (Keane, 2006). For instance, for nouns in Tamil, stress is always positioned on the first syllable of the word, regardless of the weight of the syllables (Armstrong, n.d.). Table 4 illustrates this by providing examples of words with different syllable weight profiles but nevertheless all receive word-initial stress.

Table 4. Stress patterns in Tamil trisyllabic nouns for different syllable weight profiles

Syllable Weight Profile (Stress Position)	**Tamil**			
	Predicted Stress Position in Tamil (according to syllable weight)	**Actual Pronunciation in Tamil**	**Position of Stress**	**Does Predicted match Actual Stress Position?**
L L L (APU Stress)	'**Un**-a-vu' 'Food'	'**Un-**a-vu' **ún**əvʊ 'Food'	Initial syllable	✓
L **H** L (PU Stress)	'Ka-**ran**-di' 'Spoon'	'**Ka**-ran-di' / **káɹ**əndi 'Spoon'	Initial syllable	**X**

3.4 Acquiring L2 English Stress Patterns as a Native Tamil Speaker

The developmental path of second language acquisition typically depends on the L1 properties transferred into the initial state of L2 acquisition. The FTFA predicts that everything is acquirable in the sense that the same universal principles that are available during L1 acquisition, are available during L2 acquisition as well. However, successful acquisition may be hindered by other factors such as whether the L2 input is sufficient and salient to the L2 learner to force re-structuring and overcome L1 transfer effects. In this case, for Tamil native speakers learning English, acquiring the correct stress patterns may be difficult. Because English nouns predominantly have word-initial stress (creating positional bias), the input data confirms that the stress hypothesis transferred from L1 Tamil – word-initial stress – is correct for most words and thus may not be sufficient to force re-structuring. In previous studies discussed in Section 2.4, it was seen that L2 learners indeed transfer L1 stress assignment patterns to the L2. We also saw that learners improve with increased proficiency. However, it is important to note the L1s in the studies where L1 transfer effects weakened with learner proficiency. For instance, in the Jaiprasong and Pongpairoj (2020) study, L1 Thai has word final stress, possibly making it easier for L2 English learners to observe the differences in stress position between their L1 and L2. However, acquiring English stress assignment patterns may be more difficult for L1 Tamil speakers, specifically because many words will have the same stress pattern in Tamil as in English – Tamil word-initial stress and 'positional bias' in English.

4. CURRENT STUDY

4.1 Research Motivation & Focus of Study

While certain areas of second language acquisition, such as syntax or morphology, have received a lot of attention in linguistic research studies, comparatively, there has been less focus on the L2 acquisition of phonological patterns. Particularly in phonology, the area of stress assignment has received less attention (Altmaan, 2006). Part of the motivation for this study is to contribute to the field of second language acquisition, specifically, the understudied area of stress acquisition. The study will contribute to findings on the role of L1 transfer during L2 acquisition and to the broader literature of L2 acquisition of stress paradigms. In Section 2, it was seen from previous studies that during L2 acquisition of English stress, L1 transfer effects are commonly attested. It was also seen in the Garcia (2019) study that positional bias was strong for L2 learners in English, despite having L1s that are weight-sensitive. This was even the case for advanced speakers. Thus, Tamil is interesting to look at since L1 transfer effects from Tamil would likely be even harder to overcome, in particular because of the positional bias that exists in English where most words receive word-initial stress as well. In addition, Tamil was chosen for this study, as to date, there are very few studies focusing on the Tamil language and stress patterns in Tamil.

4.2 Research Questions

The goal of this study is to answer the following research questions:

1. Do L2 English speakers with L1 Tamil show effects of L1 Tamil transfer during the production of stress patterns in their L2 English?
2. Can these speakers overcome L1 transfer effects with increased proficiency?

This was tested by comparing low proficiency to high proficiency L2 learners of English.

The study will then aim to address the following subset of research questions:

3. If L2 learners are target-like in their production of stress, have they acquired the rules of weight-sensitivity for assigning stress, or is this a result of memorization?

This was tested by comparing participants' production on existing words to nonce words.

4. Are there any differences between production and perception of stress among the participants?

This was tested by comparing participants' performance on a production versus perception task using nonce words.

4.3 Research Hypotheses

Recapping the Full Transfer Full Access Hypothesis, Full Transfer states that the initial state of L2 acquisition is comprised of the L1, leading to non-target-like structures resembling the L1. However, when L2 input data cannot be mapped onto L1 representations, this will force re-structuring, and it is assumed that L2 learners will have access to Universal Grammar like in L1 acquisition – Full Access. As L2 proficiency increases and L2 learners become more exposed to the L2 input data, they revise the grammars they initially transferred from their L1 to become more target-like. Based on the Full Transfer Full Access Hypothesis, specifically Full Transfer, it is predicted that participants will show effects of L1 Tamil transfer during the acquisition of L2 English stress patterns.

Specifically, two predictions are made. First, the participants will be able to correctly predict the stress position for words with stress on the APU syllable. This is because, since all the target words (discussed in Section 2.3 and Section 5) are tri-syllabic, APU stress will fall on the first syllable, mapping onto word-initial stress in Tamil. Due to this overlap in stress placement in Tamil and English, it is unclear whether speakers are correctly predicting the stress position in English or whether it is due to L1 transfer. This uncertainty would be clarified with trisyllabic PU words. For tri-syllabic words with stress on the PU (2nd) syllable, it is predicted that participants will still place stress on the first syllable, resulting from L1 Tamil transfer of word-initial stress. This hypothesis is primarily being predicted for L2 learners with beginner or intermediate proficiency.

For advanced L2 learners, with increased exposure to L2 input data and increased proficiency, based on Full Access, it is predicted that L2 learners should be able to re-structure stress representations in English and correctly predict stress placement for both APU and PU stress words.

However, it is important to note here that target-like acquisition may be difficult, even for advanced speakers. Since most English non-verbs do have word-initial stress, just like in Tamil, it is possible that English weight-sensitivity for stress assignment may be more difficult to acquire. Most of the input Tamil native speakers receive in the L2 English input confirms the hypothesis of fixed word-initial stress that they transferred from Tamil. Examples of words with PU stress is less frequent in the L2 input data, making it harder for L2 learners to notice weight sensitivity cues in the input and re-structure the interlanguage grammar during L2 acquisition. Garcia (2019) who tested upper-intermediate and proficient L2 speakers of English, whose L1s were also weight-sensitive, showed that these speakers did not use weight sensitivity as a cue. This shows that positional bias is very strong in the input, even when the learner's L1 is not necessarily a language with word-initial stress. With Tamil, there is the added factor of Tamil also being a fixed stress language with word-initial stress. It is therefore reasonable to predict that Tamil native speakers, even at advanced levels of proficiency, would not be able to use syllable weight cues to predict stress placement.

5. METHODOLOGY

5.1 Participants

For this study, the participant recruitment was targeted towards native English speakers and L1 Tamil L2 English speakers, with differing proficiency levels (beginner, intermediate and advanced). The inclusion of native English speakers as a control group was crucial for this study, especially to pilot the target words for the pseudoword tasks (discussed in Section 5.2), to account for any variability across speakers. Garcia (2019) discusses how weight sensitivity cues are not 100% reliable in English. This is seen in Table 2 from Section 2.2. For instance, according to the weight sensitive rules, words with a HLL weight profile are expected to have APU stress. However, Table 2 shows a percentage of 74.14% of words having APU stress. Although this is still a fairly high percentage of words, not being 100% shows that there is some room for variation from weight sensitivity rules. In English, sometimes it is also observed that stress position for some words can vary across speakers (Tokar, 2017). This is known as stress doublets – words where stress can be interchangeably placed on more than one syllable without changing the meaning (Tokar, 2017). For example, with the word '*adult',* the stress can interchangeably be placed on the first /'ædʌlt/ or final /əˈdʌlt/ syllable, without changing the meaning. Additionally, the deep orthography of English is notorious for its irregularities, where one letter can correspond to multiple sounds and one sound can be represented by multiple letters (Miller, 2019). Because participants will be presented with stimuli in written form, there may be cross-participant variation in the pronunciation of the pseudowords. Thus, native English speakers were used as a control group to account for any speaker variability among the target words, especially the pseudowords.

Participant recruitment occurred during the months of June and July 2024, through individuals known to the researcher, followed by using the snowball technique and word of mouth. For targeted community outreach, study advertisements were emailed out to points of contact and also posted on social media platforms, such as Facebook and Instagram, including pages such as Tamil Sangams (Tamil community organizations).

At the end of the recruitment period, a total of 27 speakers participated in the study. Of that, 13 participants consisted of native English speakers, who were born in Canada and were exposed to English from the age of 0. The mean age for the native English speakers was 35 years old. Table 5 shows in-depth demographic information for the native English speakers. The other 14 participants consisted of native Tamil speakers, who were born in either Sri Lanka or India and moved to Canada in their late childhood, adolescence or adulthood. They were exposed to Tamil from the age of 0 and started learning English as a second language after childhood. Additionally, all the native Tamil participants reported to speak no other languages. The mean age for the native Tamil speakers was 37 years old. The native Tamil participants were asked to self-rate their English proficiencies – which led to three beginner speakers, five intermediate speakers and six advanced speakers. Table 6 shows in-depth demographic information for the native Tamil speakers. For the purposes of discussion in this paper, here on, the native English speakers will be referred to as the '*native speakers*' and the native Tamil speakers (L1 Tamil L2 English speakers) will be referred to as the '*L2 learners'*.

Table 5. Participant Demographic Information for Native English Speakers

Participant	Type of Speaker	Gender	Age	What other languages do you speak (at what age)?	Place of Birth	Where did you grow up during your childhood/ adolescence?	Have you lived in any other countries?
P_NS1	Native	Male	42	-----	Canada	Victoria, BC and Toronto	-----
P_NS2	Native	Female	50	French (0)	Canada	Penetanguishene, Ontario	Switzerland (1 year at 18 years old)
P_NS3	Native	Female	40	French (8)	Canada	Guelph, Ontario	-----
NS1	Native	Male	31	-----	Canada	Toronto, Ontario	-----
NS2	Native	Male	34	-----	Canada	Toronto, Ontario	-----
NS3	Native	Male	37	-----	Canada	Toronto, Ontario	-----
NS4	Native	Male	63	-----	Canada	East Coast of Canada	-----
NS5	Native	Male	26	Serbian (0)	Canada	Canada and Europe	Serbia (2 years) Slovenia (1 year) France (1 year) Italy (1year)
NS6	Native	Male	23	Tamil. 0	Canada	Toronto, Ontario	-----
NS7	Native	Female	26	Tamil, 0	Canada	Toronto, Ontario	-----
NS8	Native	Male	23	-----	Canada	Toronto, Ontario	-----
NS9	Native	Female	30	Cantonese (0) Mandarin (0)	Canada	Toronto, Ontario	-----
N10	Native	Male	24	-----	Canada	Toronto, Ontario	-----

Table 6. Participant Demographic Information for Native Tamil Speakers

Participant	English Proficiency	Gender	Age	Where were you born?	What age did you move to Canada?	Have you lived in any other countries?	Exposure to English before moving to Canada (Please specify)	What age did you start learning English?
L2-1	Intermediate	Female	60	Sri Lanka	30	No	Weekly – English class	19
L2-2	Advanced	Female	28	India	12	No	Only Passively (Through TV)	12
L2-3	Beginner	Female	56	Sri Lanka	33	No	Weekly – English school	19
L2-4	Intermediate	Female	29	India	24	No	Daily – in office	16
L2-5	Beginner	Female	39	Sri Lanka	32	No	Weekly – high school	14
L2-6	Intermediate	Female	31	India	25	No	Weekly – subject in grade 5-10	13
L2-7	Advanced	Female	41	Sri Lanka	14	No	Weekly – English tutor	11
L2-8	Advanced	Male	57	India	40	New York (5 years) before moving to Canada as English teacher	Daily – High school, continued learning during university	17
L2-9	Advanced	Female	83	Sri Lanka	52	No	Weekly - work & private class	25
L2-10	Advanced	Female	43	India	27	Np	Daily – TV, university, with colleagues	20
L2-11	Intermediate	Female	31	India	15	India – went back at age 19 for uni (6 years)	Only Passively - through tv shows	15
L2-12	Advanced	Male	25	India	9	No	Only Passively – tv shows	9
L2-13	Beginner	Female	58	Sri Lanka	52	No	Weekly – school subject	16
L2-14	Intermediate	Male	39	India	31	No	Daily – English classes	20

5.2 Experimental Design Overview

This study was designed using the Gorilla software, to ensure ease of use for the participants. Over the course of 10–15 minutes, participants completed the study online and each task was untimed. Making the study tasks offline tests, where reaction times were not measured, meant that participants will have time to think before they respond. This ensured to get rid of any possible processing pressures.

Prior to the start of the study, participants were asked to go through the consent form, which informed the participants about the details of the study and the researcher, the rights and confidentiality of the participants and agreeing to have their responses audio recorded. In the consent form, participants were also told that the tasks will be testing for knowledge of vocabulary. This was done to avoid bias from any purposeful and conscious pronunciation and to get rid of any pressure to produce target-like pronunciations.

The study consisted of three tasks – Task 1: Pronunciation Task, Task 2: Production Task and Task 3: Perception Task (see Section 5.3 - 5.5 for task details). Prior to the start of each task, participants were given clear instructions and were also asked to test whether their microphone and speaker was working. For the target words that were used, while Task 1 included a list of existing words in English, Task 2 and 3 used pseudowords. Pseudowords are nonce (made up) words that resemble real words in a language, but don't actually exist in the language's lexicon. Having pseudowords was essential to this study, as this gets rid of any proficiency or vocabulary bias from prior lexical knowledge and tests whether stress patterns are being acquired or memorised from the input.

The study on Gorilla was also set up such that for all three tasks, the lists of words were randomized. Following the three tasks, participants were asked to complete a participant questionnaire to gather demographic information about the participant as well as additional information about their language background. In the questionnaire, L2 learners were also asked about their daily exposure and interaction with other L1 Tamil L2 English learners and native English speakers. The responses of the participants are shown in Table 7. The complete list of questions from the Participant Questionnaire can be found in Appendix A. Lastly, participants were given a de-briefing summary and de-briefing consent form, informing the participants about the actual purpose of the study and asking whether they consent to submit their responses. Upon study completion, participants were compensated for their time with a $5 Amazon gift card. All study procedures were conducted in accordance with York University's Office of Research Ethics protocols.

Table 7. Frequency of L1 Tamil L2 English speakers' interaction with native English speakers (top row) and other L1 Tamil L2 English speakers (bottom row), as reported on the participant questionnaire

Participant	Native Speakers / L1 Tamil Speakers	Home	Work	School	Neighbourhood	With friends	Community/ Family Gatherings
L2-1	Native Speakers	Everyday	Never	Never	Few times a week	Few times a week	Once a month
	L1 Tamil Speakers	Everyday	Never	Never	Few times a week	Few times a year	Once a month
L2-2	Native Speakers	Everyday	Few times a month	Never	Few times a week	Few times a month	Once a month
	L1 Tamil Speakers	Everyday	Everyday	Never	Few times a week	Few times a month	Once a month
L2-3	Native Speakers	Everyday	Never	Never	Few times a week	Few times a week	Few times a year
	L1 Tamil Speakers	Never	Never	Never	Once a week	Never	Few times a year
L2-4	Native Speakers	Everyday	Everyday	Few times a week	Once a week	Everyday	Few times a month
	L1 Tamil Speakers	Never	Everyday	Few times a week	Never	Never	Never
L2-5	Native Speakers	Everyday	Never	Once a week	Once a week	Once a week	Once a week
	L1 Tamil Speakers	Never	Never	Once a week	Once a week	Never	Once a month
L2-6	Native Speakers	Everyday	Everyday	Everyday	Once a week	Everyday	Once a month
	L1 Tamil Speakers	Never	Few times a month	Everyday	Once a week	Once a week	Never
L2-7	Native Speakers	Everyday	Everyday	Everyday	Few times a week	Few times a month	Few times a year
	L1 Tamil Speakers	Everyday	Everyday	Everyday	Few times a week	Few times a month	Few times a year
L2-8	Native Speakers	Everyday	Everyday	Everyday	Few times a week	Few times a year	Few times a year
	L1 Tamil Speakers	Everyday	Everyday	Everyday	Everyday	Everyday	Everyday
L2-9	Native Speakers	Everyday	Never	Never	Few times a week	Few times a month	Once a month
	L1 Tamil Speakers	Everyday	Never	Never	Few times a week	Never	Once a month
L2-10	Native Speakers	Everyday	Few times a month	Never	Few times a week	Few times a month	Once a month
	L1 Tamil Speakers	Everyday	Everyday	Never	Few times a week	Never	Few times a year

L2-11		Everyday	Few times a month	Never	Few times a week	Few times a month	Once a month
		Everyday	Everyday	Never	Few times a week	Never	Few times a year
L2-12		Everyday	Everyday	Everyday	Few times a week	Few times a month	Few times a year
		Everyday	Everyday	Everyday	Few times a week	Few times a month	Few times a year
L2-13		Everyday	Never	Never	Everyday	Once a month	Once a month
		Few times a week	Never	Never	Few times a week	Never	Few times a year
L2-14		Everyday	Everyday	Never	Everyday	Everyday	Few times a year
		Never	Everyday	Never	Few times a week	Never	Few times a year

5.3 Piloting Target Words with Native English Speakers

The lists of real and nonce target words were initially piloted with three native English speakers to account for any speaker variability from the expected weight-sensitive stress positions. Table 8 shows a list of words that were removed from and added to the list target words. The rest of the words remained and were used for the actual study. Please refer to Appendix B, C and D for the complete list of target words for Task 1, 2 and 3 in the study respectively. Because the three native English speakers (P_NS1, P_NS2, P_NS3) piloted the target words and the list of words were altered, these speakers were excluded from the data analysis when comparing with the L2 learners.

Table 8. Words that were removed and added to the target word list based on results from pilot study with native English speakers.

Target Word	Type of Target Word	Stress Position	Task	Added or Removed
beautiful	Real	APU	Task 1	Added
capital	Real	APU	Task 1	Added
felcony	Pseudoword	APU	Task 2	Added
merector	Pseudoword	PU	Task 2	Removed
montiti	Pseudoword	APU	Task 3	Removed
melonda	Pseudoword	PU	Task 3	Removed
loonity	Pseudoword	APU	Task 3	Added
merlonda	Pseudoword	PU	Task 3	Added

5.4 Task 1 – Pronunciation Task

This task asked participants to pronounce existing English words, to test whether stress is being placed on the expected syllable and whether there is L1 transfer of stress patterns from Tamil. Prior to the start of Task 1, participants were asked to ensure their microphone was working, as this task would require their responses to be audio recorded. On the screen, participants were presented with each word, asked to pronounce the word out loud and once completed, clicked "continue" to move onto the next word. The order of words was randomized for each participant. See Appendix E for sample stimuli of Task 1.

The target words for Task 1 consisted of 34 English nouns. All words were tri-syllabic. 15 of those words had a heavy penultimate syllable and therefore had PU stress, which meant stress was on the 2nd syllable in the case of tri-syllabic words. The other 15 words had APU stress because the penultimate syllable was light. Stress for those words was on the 1st syllable.

Table 9 provides a sample target word for each condition. (Please see Appendix B for the complete list of Task 1 target words).

Table 9. Sample list of words for Task 1 - Pronunciation Task

Stress on APU (1st) Syllable	**Stress on PU (2nd) Syllable**
<u>**di**</u>-no-saur	fla-<u>**min**</u>-go

5.5 Task 2 – Production Task

In this task, participants were asked to pronounce made-up English words, to test whether English stress patterns have been acquired, or memorized from the input data. As with Task 1, prior to the start of the task, participants were asked to check whether their microphone was working to ensure the responses are being audio-recorded. On the screen, participants were presented with each pseudoword, asked to pronounce the word out loud and click "next" to continue once completed with each word. See Appendix E for sample stimuli of Task 2.

For Task 2, the target word list consisted of 20 tri-syllabic novel pseudowords, which were piloted with three native English speakers. Each word was included in the list for the L2 learners if at least 2 out of the 3 native English participants placed the stress on the expected syllable according to the weight sensitivity rules for English. Of the 20 pseudowords, 10 words had PU stress, while the other 10 words had APU stress. These words were presented to each participant in randomized orders. Table 10 provides a sample list of these target words. (Please see Appendix C for the complete list of Task 2 target words).

Table 10. Sample list of pseudowords for Task 2 – Production Task

Stress on APU (1st) Syllable	**Stress on PU (2nd) Syllable**
<u>**am**</u>-bi-lin	fa-**min**-zel

5.6 Task 3 – Perception Task

Unlike Task 1 and 2, which were visual tasks (i.e. words were shown on the screen), Task 3 was an audio and visual task (i.e. participants were shown words on the screen and played recordings). Specifically, in this task, participants were given two pronunciations of made-up English words and asked to choose which pronunciation sounded the most correct to them. The purpose of this task was to test whether participants were able to perceive stress assignment correctly. In other words, if participants were producing pseudowords with unexpected stress placement, this task gave insight as to whether they haven't acquired the English stress patterns or whether they have, but difficulties are only in production. Additionally, the inclusion of a perception task for Task 3 ensured to get rid of task effects such as mental fatigue. Because Task 1 and Task 2 required the participants to perform similar tasks (pronouncing words as they appeared on the screen), switching to a different task (Task 3) keeps participants attentive, ensuring that findings were not a result of specific task effects. Also, having a perception task where participants can hear and choose from two pronunciations as opposed to pronouncing the words themselves gets rid of any performance pressures.

Prior to the start of the task, participants were asked to ensure their speakers were working. On the screen, participants were presented with the pseudoword and two pronunciations. Participant were given instructions to click each pronunciation to hear the sound recording. After hearing both pronunciations, they were given the option to pick either 'Pronunciation 1' or 'Pronunciation 2' and then click 'Next' to continue onto the next word. See Appendix E for sample stimuli of Task 3.

For Task 3, the target word list consisted of 20 tri-syllabic pseudowords. As with the previous task, each word was piloted with three native English speakers and only included in the list for the L2 learners if at least 2 out of the 3 native English speakers chose the pronunciation with the expected stress position.

Each pseudoword was audio-recorded twice by the researcher (native English speaker) – once with PU stress and then again with APU stress. The study was set up such that the words were presented to each participant in randomized orders and the pronunciations were randomized as well. For instance, 'Pronunciation 1' didn't always have PU stress and vice versa. Table 11 provides a sample list of these target words. (Please see Appendix D for the complete list of Task 3 target words).

Table 11. Sample list of pseudowords for Task 3 – Perception Task

Target Word	Syllable Stress	Pronunciation 1	Pronunciation 2	Correct Pronunciation
tre-**fen**-dous	PU	PU	APU	Pronunciation 1
loo-ni-ty	APU	APU	PU	Pronunciation 1

5.7 Analyzing the Data

As each participant completed the study, the data was retrieved from the Gorilla website and saved for analysis. For Task 1 and 2, the individual sound recordings were downloaded and transcribed and analysed for placement of stress. Additionally, for Task 1 and 2, the sound recordings were also assessed by another native English speaker for placement of stress for the different target words. This was done to avoid researcher bias, which may arise from expecting to hear a particular stress position for a given target word.

6. RESULTS

6.1 General Overview

After data collection, the responses of participants were transcribed for stress position and analyzed. The results were compared in various dimensions to illustrate the second language acquisition of stress patterns in L2 English by native Tamil speakers. Figure 3 shows a general overview of the percentage of expected stress position among native speakers and L2 learners for all antepenultimate and penultimate stress words across all three tasks. Results show that while native speakers performed relatively equally for both APU and PU words, there was a drop in expected stress positioning for PU words in the L2 learners. It was also noted during response transcription that no participants placed stress word-finally (i.e. last syllable) for any of the tri-syllabic real or made-up words.

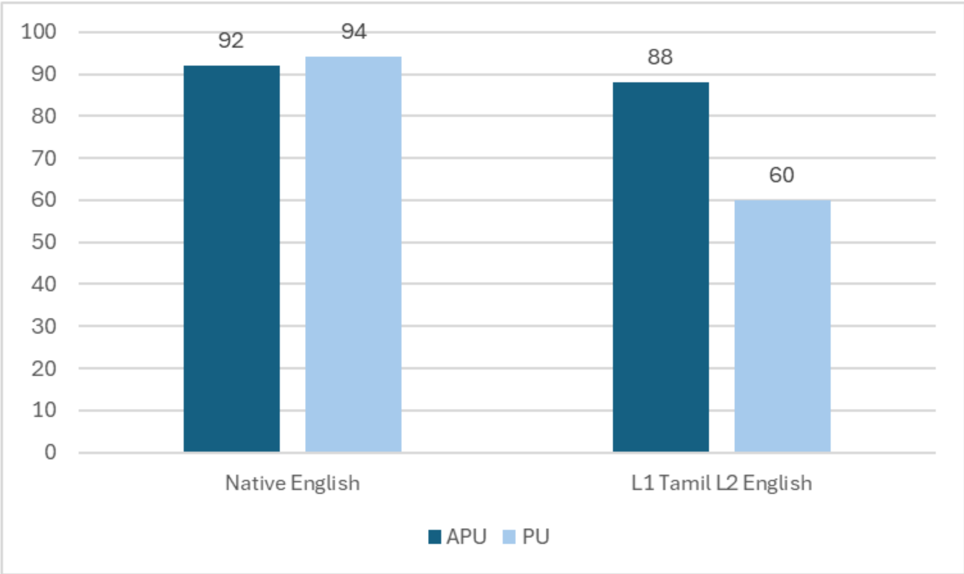


Figure 3. Native English speakers' and L1 Tamil L2 English learners' percentage of expected stress position (%) for words with APU vs. PU stress across Task 1, 2 and 3.

6.2 Tasks Results

In Task 1, participants were given a list of 34 real words to read out loud – 17 of which the stress was predicted to fall on the antepenultimate syllable (henceforth “APU words”) and 17 of which stress was predicted to fall on the penultimate syllable (henceforth “PU words”). Figure 4 shows the percentage of expected stress position for native speakers and the three levels of L2 learners – beginner, intermediate and advanced. Results show that for APU words, the percentage of expected stress position fell between 80-100% for all four groups. However, while the native speakers performed equally well for the PU words, for the L2 learners, there is an effect of proficiency. The advanced L2 learners produced stress on the expected syllable most often, followed by intermediate L2 learners and beginner speakers having the lowest number of words with expected stress position.

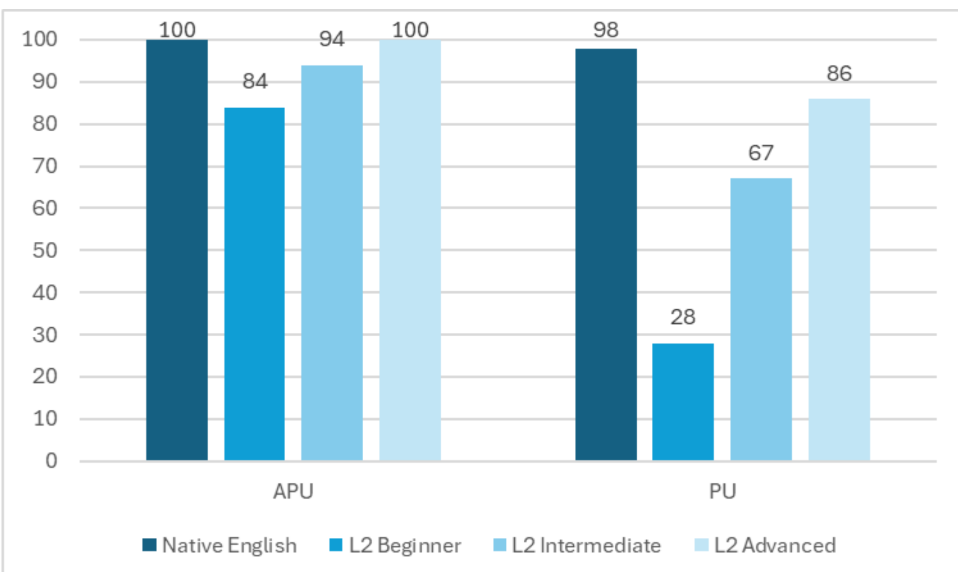


Figure 4. Percentage of expected stress position (%) in Task 1 for APU vs. PU words – among native English speakers and three groups of L1 Tamil L2 English learners (beginner, intermediate, advanced)

In Task 2, participants were given a list of 20 pseudowords to pronounce out loud – 10 of which the stress was predicted to fall on the antepenultimate syllable (“APU pseudowords”) and 10 of which stress was predicted to fall on the penultimate syllable (“PU pseudowords”). Figure 5 shows the percentage of expected stress position for native speakers and the three levels of L2 learners – beginner, intermediate and advanced. Results show that for APU words, the percentage of expected stress position fell between 73-93% for all four groups. An interesting observation here is that the advanced L2 learners performed more as expected than the native speakers. A possible reason for this will be discussed in Section 7. On the other hand, while the native speakers performed better for the PU words, the L2 learners performed relatively less compared to APU words. In addition, there was an effect of proficiency seen here. The advanced L2 learners had the highest number of words with expected stress position, followed by intermediate L2 learners and beginner speakers having the lowest number of words with expected stress position.

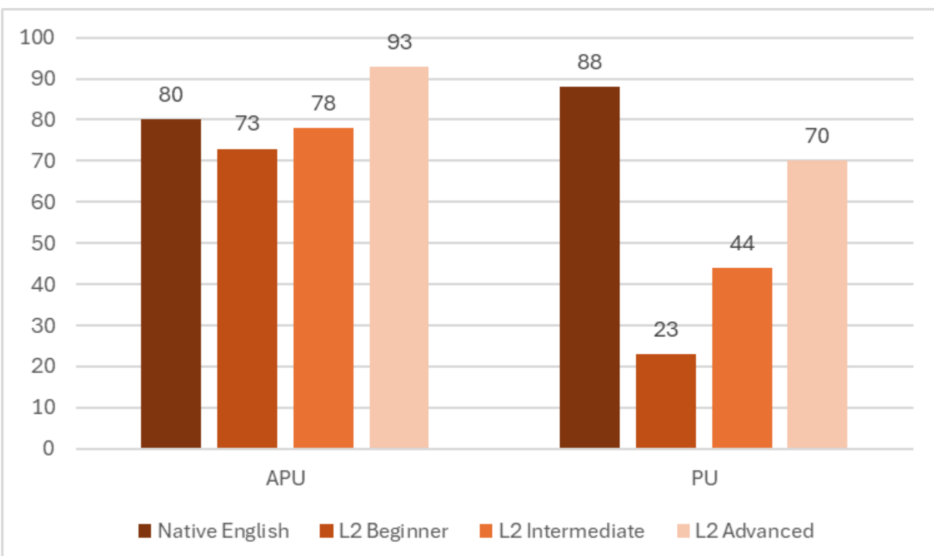


Figure 5. Percentage of expected stress position (%) in Task 2 for APU vs. PU words – among native English speakers and three groups of L1 Tamil L2 English learners (beginner, intermediate, advanced)

In Task 3, participants were given a list of 20 pseudowords – 10 of which were predicted to have APU stress and 10 of which were predicted to have PU stress. For each pseudoword, the participants were given two audio recordings – one audio recording with an APU stress pronunciation of the target pseudoword and another audio recording with a PU stress pronunciation. Figure 6 shows the percentage of expected stress position for native speakers and the three levels of L2 learners – beginner, intermediate and advanced. Results show that for target words where the penultimate syllable was light (the “APU target words”), the percentage of expected stress position fell between 80-93% for all groups except L2 beginners, who correctly predicted the expected APU stress for only 63% of the words. For the words where the penultimate syllable was heavy (the “PU target words”), while the native speakers performed as expected, the L2 learners were less accurate compared to the APU words. In addition, there was an effect of proficiency. The beginner L2 learners chose the expected PU stress pronunciation for the lowest number of words. This was followed by the intermediate L2 learners at 54% and the advanced L2 learners, who chose the chose stress pronunciation for 77% of the words with expected PU stress.

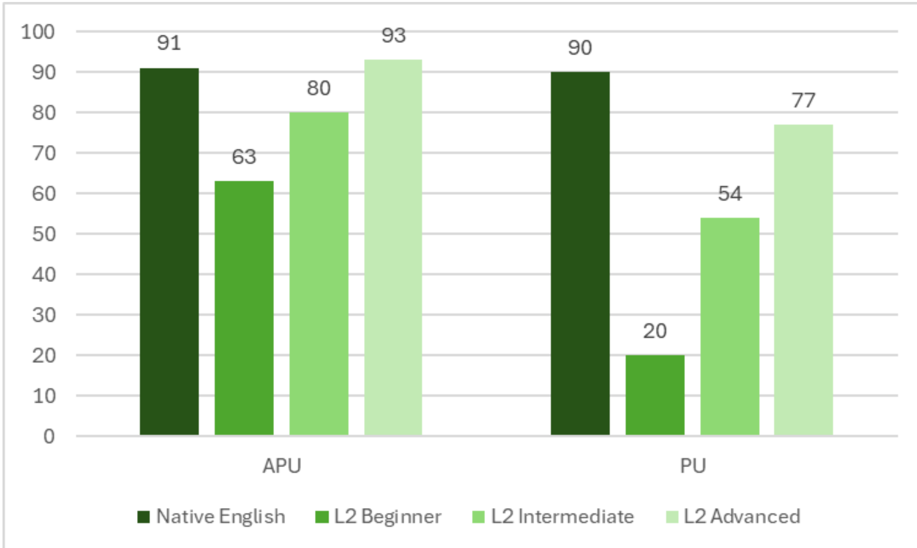


Figure 6. Percentage of expected stress position (%) in Task 3 for APU vs. PU words – among native English speakers and three groups of L1 Tamil L2 English learners (beginner, intermediate, advanced)

Overall, the results from Task 1, 2 and 3 illustrated that while native speakers perform better for words with expected PU stress, among the L2 learners, there was an effect of proficiency, with advanced L2 learners producing the most words with expected stress, followed by the intermediate L2 learners and beginner L2 learners performing the least target-like. These results are investigated in Sections 6.5 and 6.6, which looks into more detail at the performance of individual participants and target words.

6.3 Real vs. Pseudowords

In this section, the data was organized to look at a comparison between L2 learners' performance for real words (Task 1) versus pseudowords (Task 2 and 3) among the three proficiency groups. Figure 7 shows the results for real and made-up words with APU stress, while Figure 8 looks at words with PU stress. In both instances, it is seen that the percentage of expected responses is higher in existing words compared to non-existent words that are unfamiliar to the L2 learners. It is also important to note that the pseudoword results are comprised of target words from Task 2 and 3 – one of which was a production task and the other was a perception task. Section 6.4 looks at a comparison of the results between Task 2 and 3

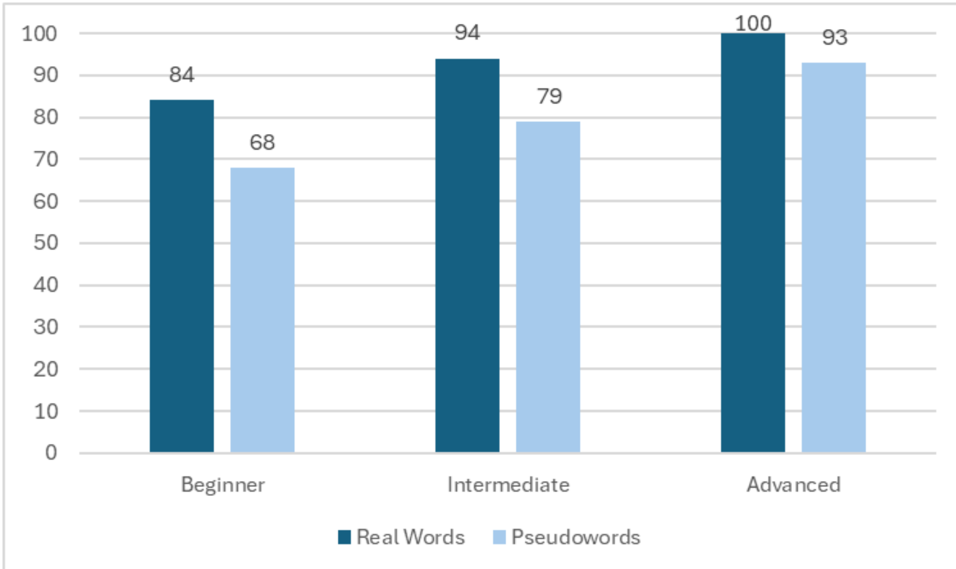


Figure 7. Percentage of expected stress position (%) among L1 Tamil L2 English learners (beginner, intermediate, advanced) for APU real vs. pseudowords.

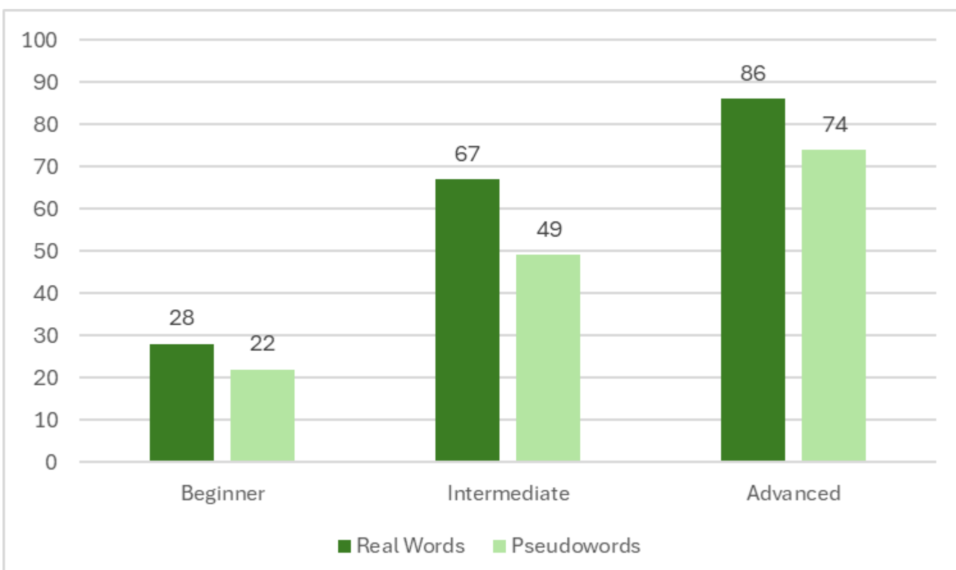


Figure 8. Percentage of expected stress position (%) among L1 Tamil L2 English learners (beginner, intermediate, advanced) for PU real vs. pseudowords.

6.4 Task Effects – Production vs. Perception

This section compares the performance of L2 learners in Task 2 (which is a production task) versus Task 3 (a perception task). Figure 9, Figure 10 and Figure 11 illustrate the results for beginner, intermediate and advanced L2 leaners respectively. For L2 beginners, they performed fairly equal in Task 2 and 3 for PU words, while performing slightly more accurately in Task 2 for APU words. On the other hand, for both intermediate and advanced L2 learners, their performance was fairly equal between Task 2 and 3 for the APU words. However, for the PU words, the percentage of expected stress position was higher in Task 3 compared to Task 2.

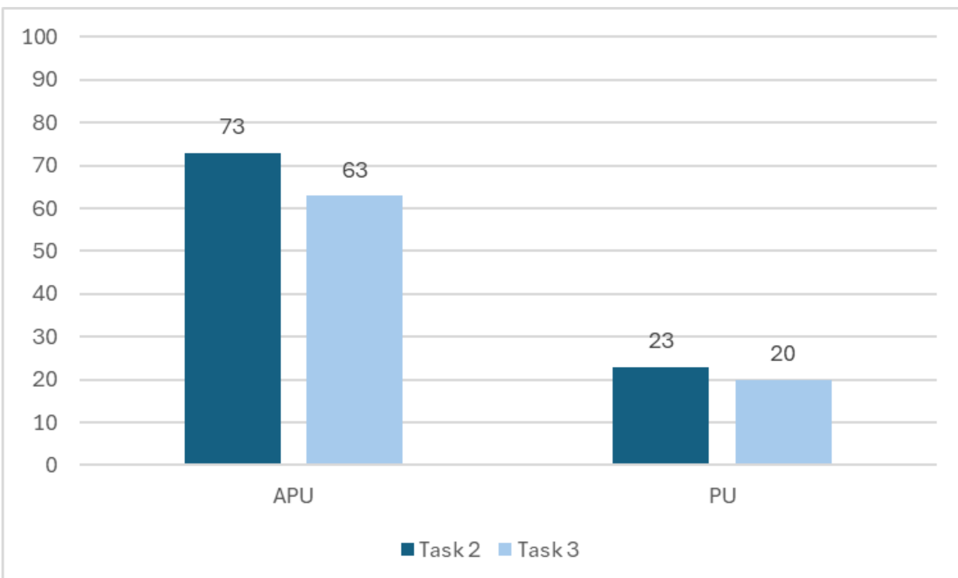


Figure 9. Percentage of expected stress position (%) in L2 beginner speakers for APU and PU words in Task 2 vs. Task 3.

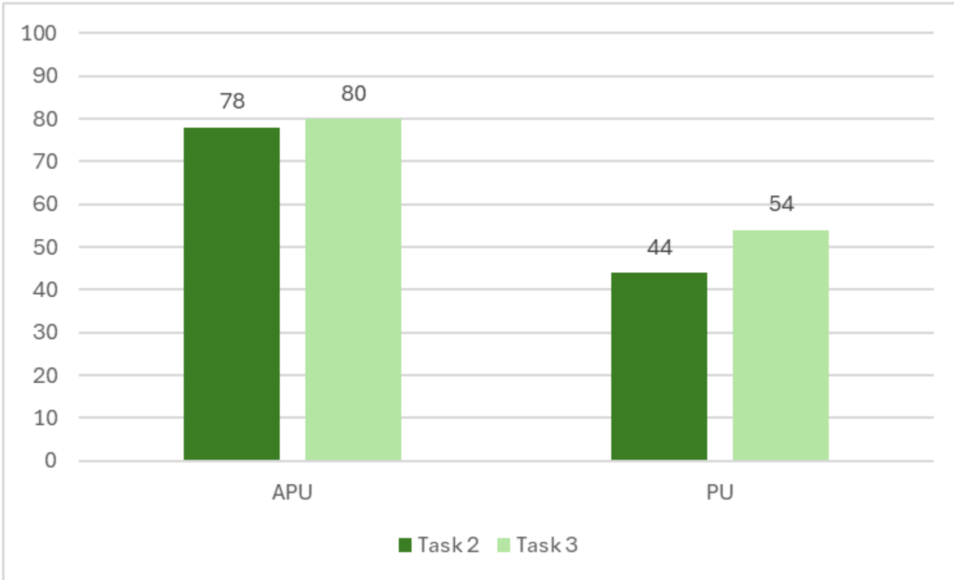


Figure 10. Percentage of expected stress position (%) in L2 intermediate speakers for APU and PU words in Task 2 vs. Task 3.

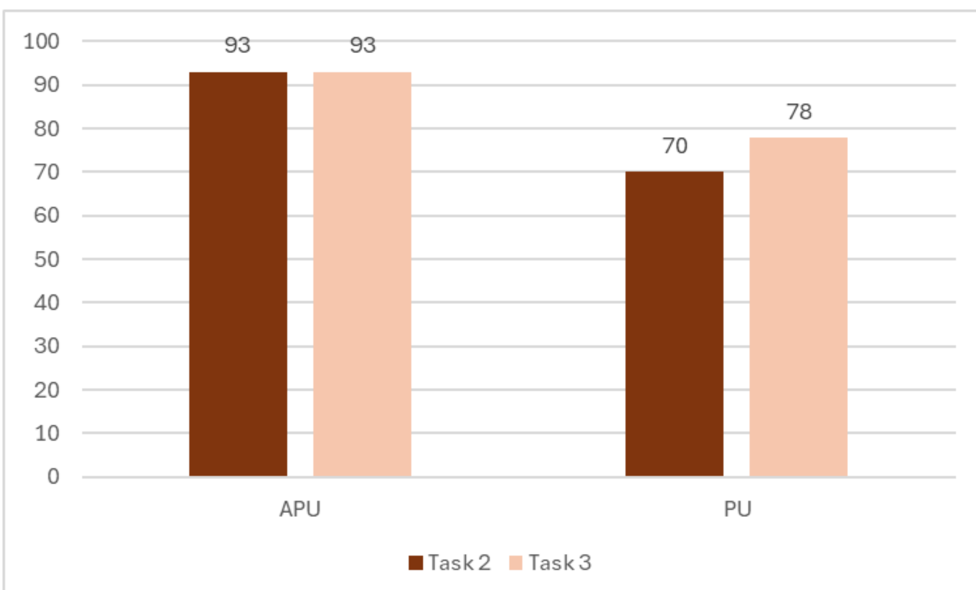
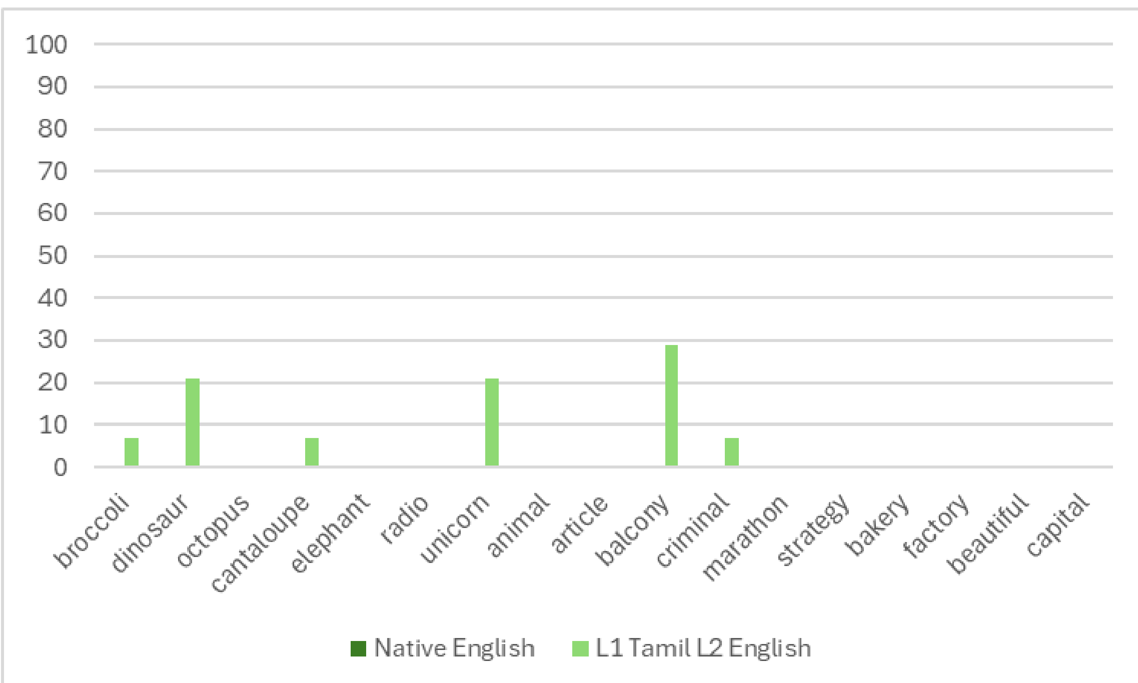


Figure 11. Percentage of expected stress position (%) in L2 advanced speakers for APU and PU words in Task 2 vs. Task 3.

6.5 Individual Word Results

This section looks at the data for the APU and PU words across all three tasks to examine whether difficulties with any of the specific target words may have skewed or biased the results. Figure 12 shows the APU (a) and PU (b) words from Task 1. For the APU words, the native speakers had no issues and the L2 learners had minimal unexpected stress placement. For the PU words, 80% of the L2 learners had unexpected stress placement for '*vanilla*' and over 40% of the L2 learners had unexpected stress placement for '*banana', 'potato', 'flamingo', 'director', 'collector'* and '*volcano'.* It is also important to note here that two of the ten native speakers also pronounced '*director*' with an APU stress as opposed to the expected PU stress.

(a)



(b)

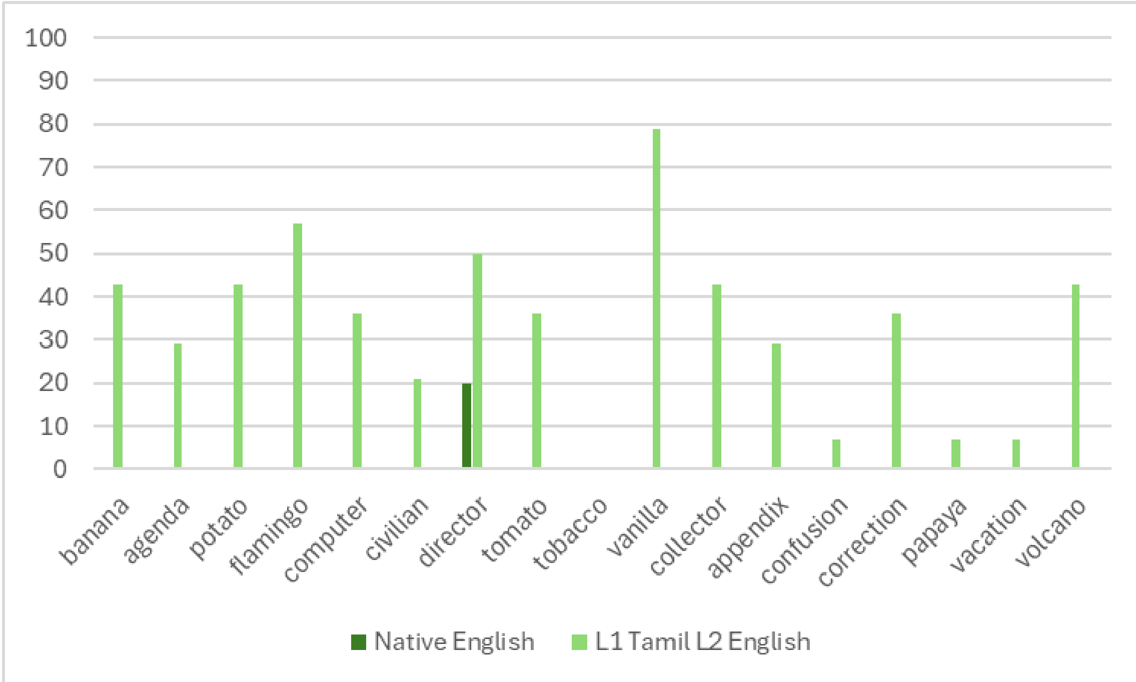
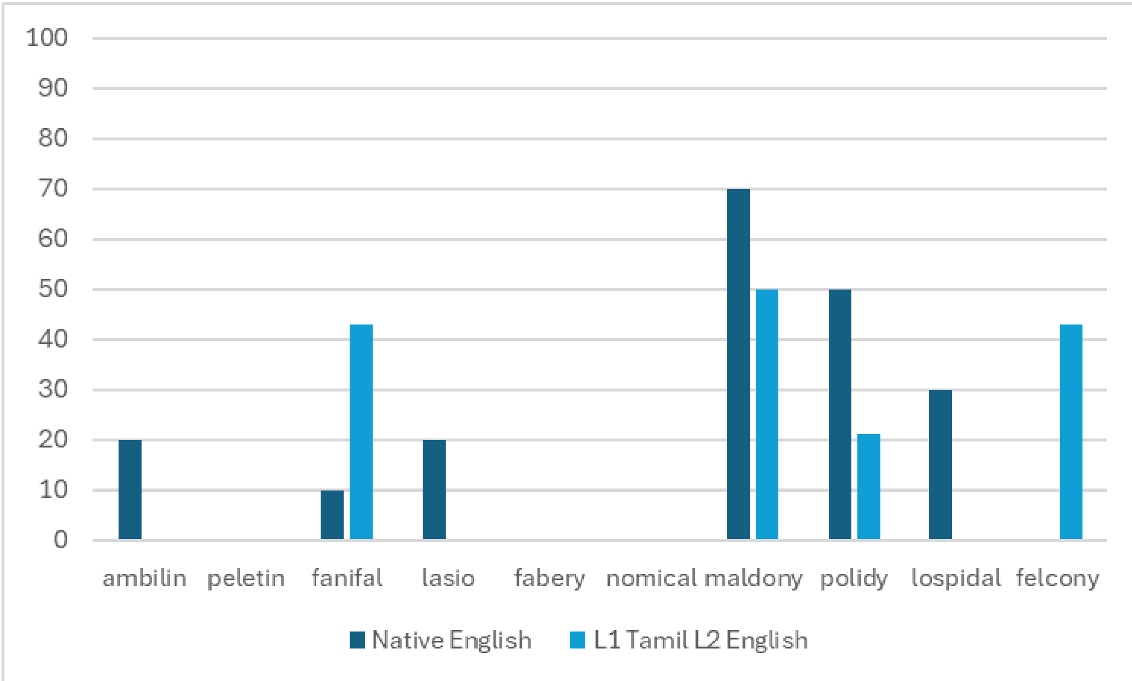


Figure 12. Percentage of native English speakers vs. L1 Tamil L2 English speakers (%) with unexpected stress position for APU **(a)** and PU **(b)** words from Task 1.

Figure 13 looks at APU (a) and PU (b) words from Task 2. For the APU words, 50-70% of the native speakers had pronounced '*maldony'* and '*polidy'* with PU stress. A similar observation was made for 20-50% of the L2 learners for the same words. For the PU stress words, some variation was found among the native speakers, for 6 of the target words. For the L2 learners, it was seen than 60-80% of the speakers placed stress on the APU syllable as opposed to the PU syllable for '*faminzel', 'padilla', 'fenama', pecilli'* and *'salindi'*.

(a)



(b)

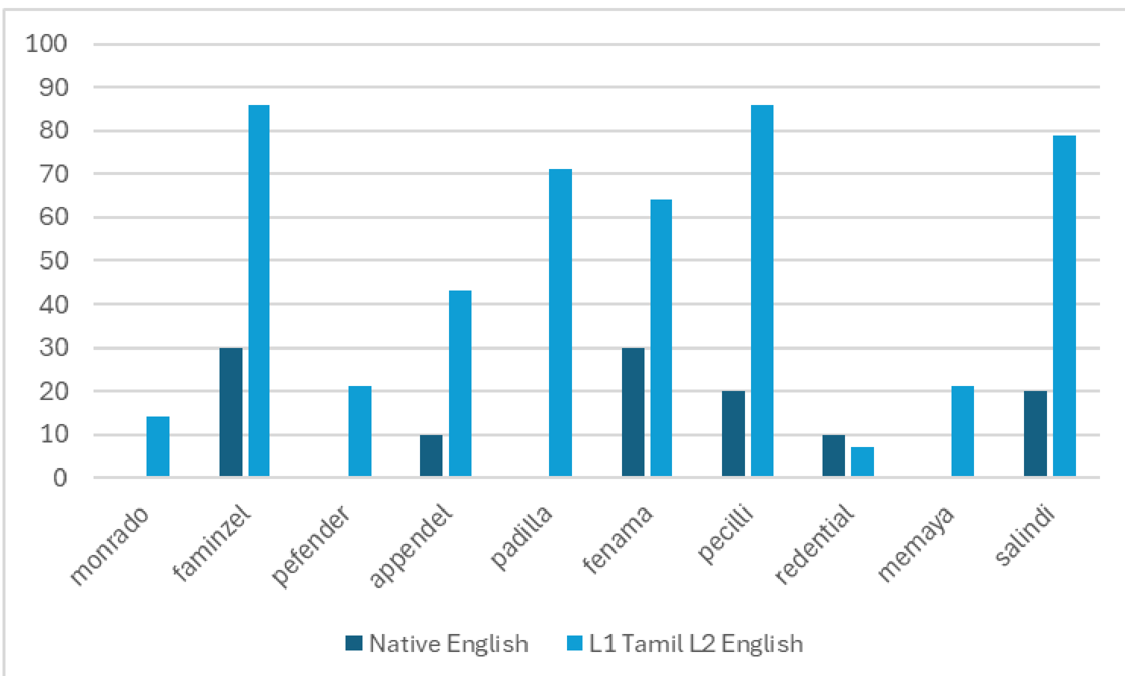
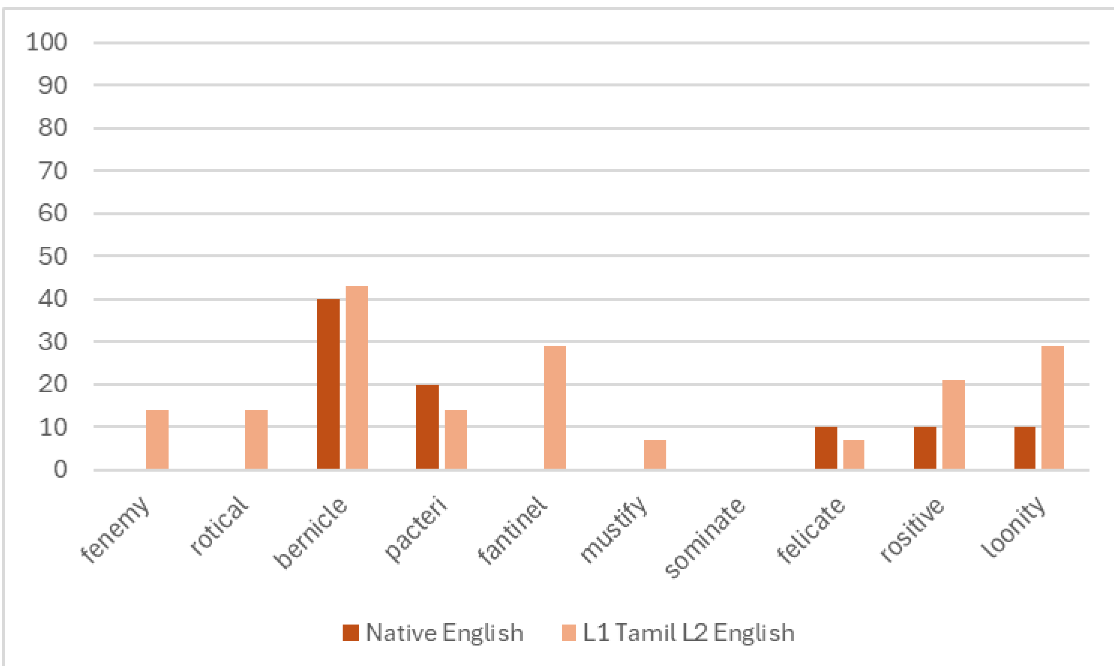


Figure 13. Percentage of native English speakers vs. L1 Tamil L2 English speakers (%) with unexpected stress position for APU **(a)** and PU **(b)** words from Task 2.

Lastly, Figure 14 looks at APU (a) and PU (b) words from Task 3. For the APU words, other than *'bernicle',* none of the words consistently received the unexpected stress assignment, by neither the native speakers and or the L2 learners. However, for the PU stress, some of the words for which more than 70% of the speakers chose the unexpected pronunciation were *'femestic'* and '*tamingo'.* Additionally, one word that stood out in the data results was '*opender'*. This word had an incorrect stress percentage of more than 80% in both the native speakers and L2 learners. A possible explanation for this will be discussed in Section 7.

(a)



(b)

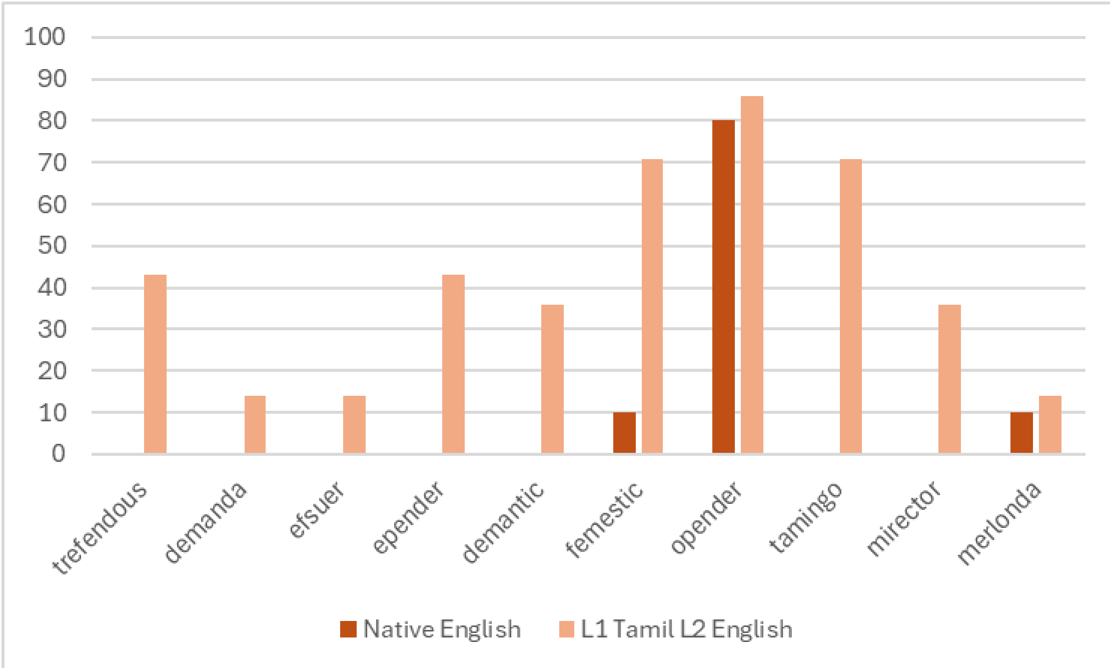


Figure 14. Percentage of native English speakers vs. L1 Tamil L2 English speakers (%) with unexpected stress position for APU **(a)** and PU **(b)** words from Task 3.

6.6 Individual Participant Results

In this last section, the results of each participant will be looked at individually for APU and PU words in Task 1, 2 and 3. In Figure 15, which looks at native speakers, for APU words (a) and PU words (b), it was seen that, overall, most native speakers chose the expected stress assignment 90-100% of the time in Task 1 and 3. For Task 2, these percentages dropped among the native speakers, especially for APU words.

(a)

(b)

Figure 15. Percentage of expected stress position (%) for each native English speaker for APU (a) and PU (b) words in Task 1, 2 and 3.

In Figure 16 and Figure 17, which look at L2 beginners and intermediate speakers respectively, it is seen that overall, the speakers belonging to each proficiency group performed relatively similar to each other for both the APU words (a) and PU words (b). However, for the L2 beginner speakers, it is important to note that for the PU words, while speaker L2-5 predicted

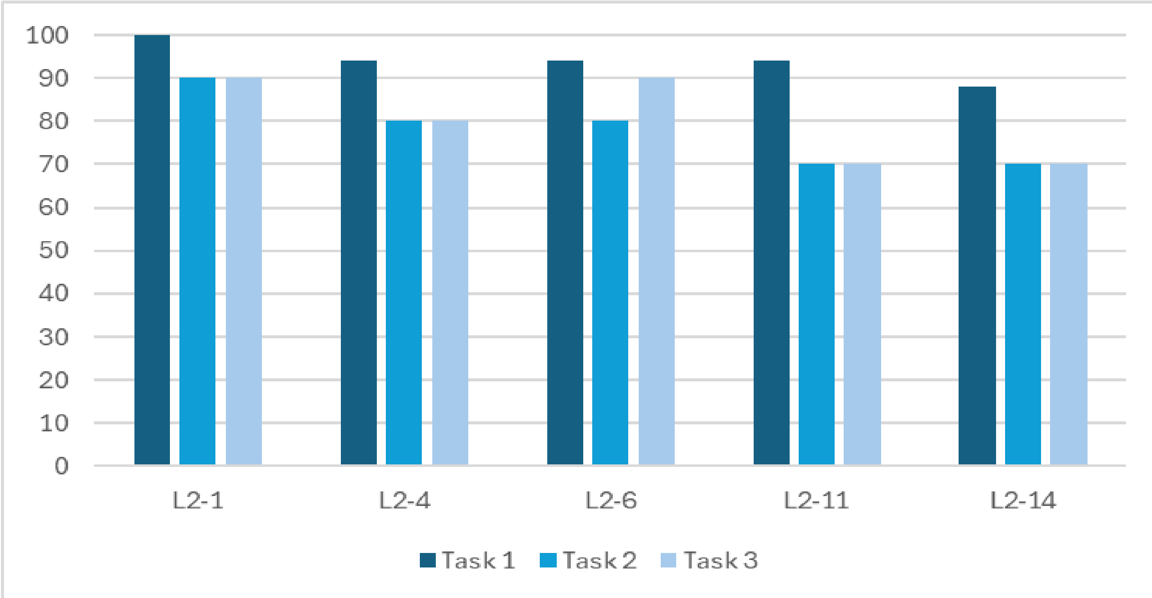
40% of the real words with expected stress for Task 1, they only predicted the expected stress for 10-20% of the pseudowords in Task 2 and 3. A similar observation was made for L2 intermediate speakers L2-6, L2-11 and L2-14, who scored 70-80% on Task 1 but 40-50% on Task 2 and 3.

(a)

(b)

Figure 16. Percentage of expected stress position (%) for beginner L2 learner for APU (a) and PU (b) words in Task 1, 2 and 3.

(a)



(b)

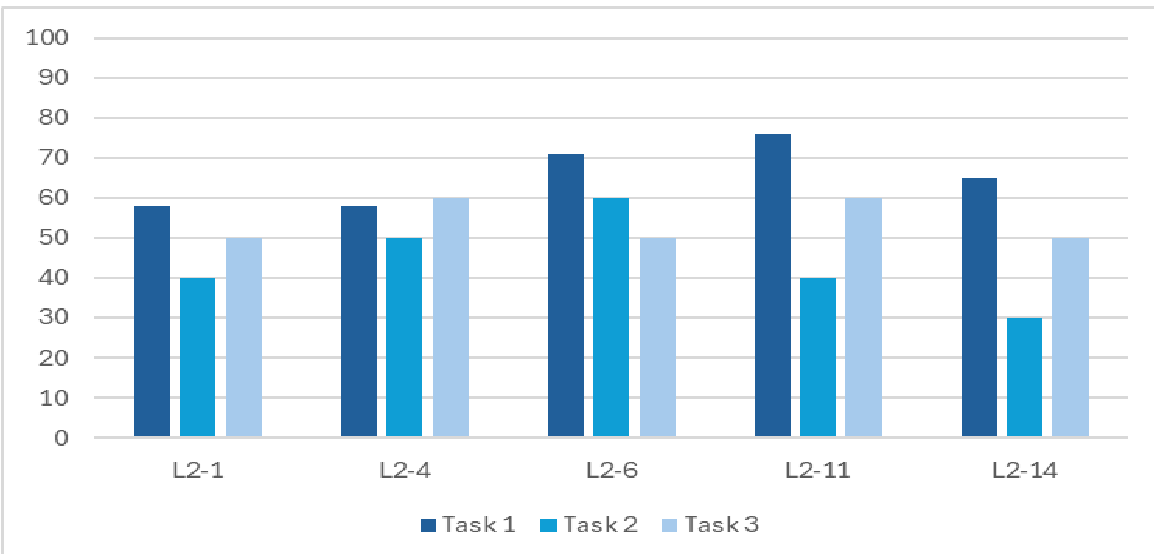
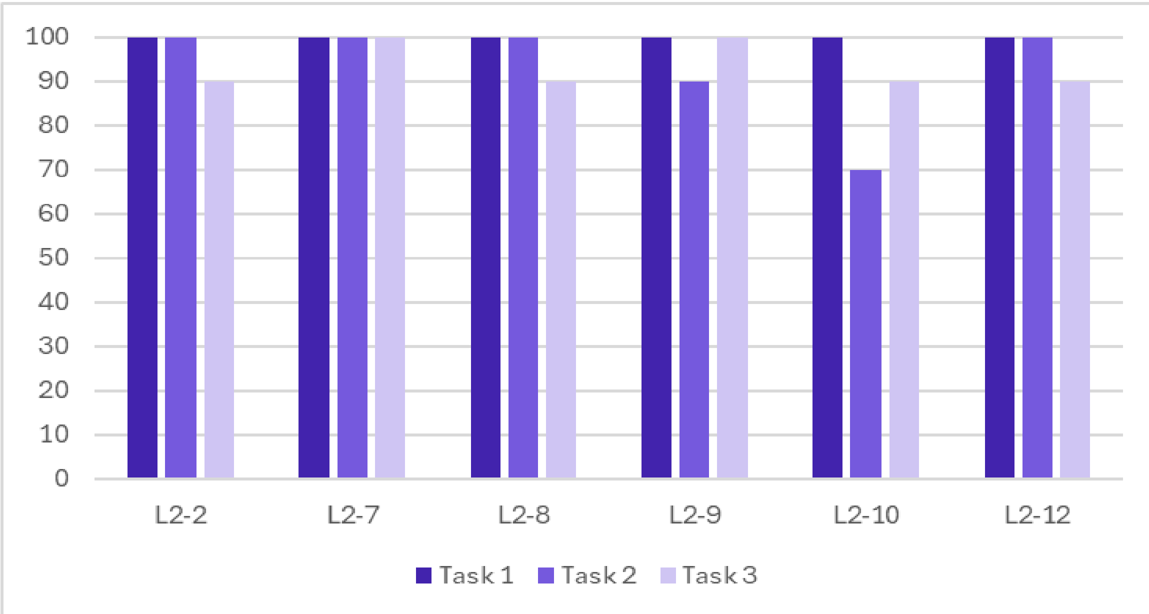


Figure 17. Percentage of expected stress position (%) for each intermediate L2 learner for APU (a) and PU (b) words in Task 1, 2 and 3.

Lastly, Figure 18 looks at the individual results for advanced L2 learners. It is seen that speakers L2-2, L2-7, L2-8 and L2-12 had a high percentage of words where the stress was positioned as expected compared to speakers L2-9 and L2-10. It is also interesting to note that L2-8 had an exceptionally high percentage in all three tasks in comparison to the rest of the advanced L2 learners. In these cases, it may be important to discuss the demographics of these speakers provided in the Participant Questionnaire responses (Section 7.6).

(a)



(b)

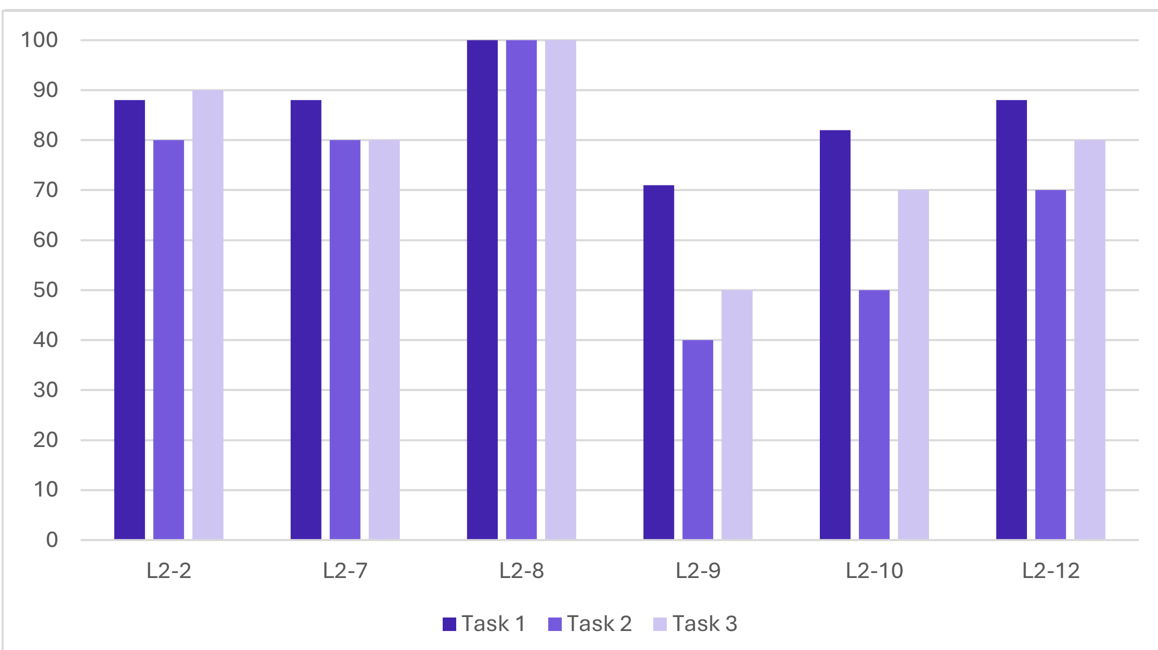


Figure 18. Percentage of expected stress position (%) for each native English speaker for APU (a) and PU (b) words in Task 1, 2 and 3.

7. DISCUSSION

7.1 Overview

As discussed in Section 2.1, English stress is not completely predictable due to stress determining factors such as lexicality, but there are clear patterns which can be seen. These patterns are influenced by weight sensitivity of syllables (Hayes, 1992). For non-verbs specifically, such as nouns, the final syllable is regarded as extrametrical and the weight of the penultimate (PU) syllable is what is taken into consideration. If the penultimate syllable is heavy, the word has penultimate stress, while if the penultimate syllable is light, the stress falls on the antepenultimate (APU) syllable (Hayes, 1992). With English nouns having either PU or APU stress (in the case of words with three or more syllables) and because 85% of the English corpus is accounted for by words with one, two or three syllables, 70% of the words automatically have initial stress, creating a positional bias (Garcia, 2019). Tamil, on the other hand, is a language with word-level stress, where stress occurs word-initially (Keane, 2006). Because Tamil stress patterns seem to align with English stress patterns (due to positional bias), there is an overlap in both language's stress positions. Most of the L2 English input the L1 Tamil learner is exposed to then confirms the L2 English learner's transferred hypothesis that English stress is word-initial. In the next sections, the research questions proposed for this study and the predictions that were made will be revisited to discuss the implications of the study findings.

7.2 Effects of L1 Tamil Transfer on L2 English Stress Patterns

First and foremost, this study aimed to examine whether L2 English speakers with L1 Tamil show effects of L1 Tamil transfer during the production of stress patterns in their L2 English. In light of Full Transfer from the FTFA hypothesis, it was predicted that L2 learners will show effects of L1 Tamil transfer during the acquisition of L2 English stress patterns. Specifically, in APU stress tri-syllabic words, which have word-initial stress, L2 learners will be able to correctly position stress. On the other hand, for PU stressed tri-syllabic words, where stress falls on the second syllable instead of the first, the L2 learners will still incorrectly position the stress on the initial syllable, showing effects of L1 Tamil transfer.

When data from all three experimental tasks were collectively analyzed into APU and PU words, it was seen that while native speakers for both APU and PU words and L2 learners for APU words predicted stress position as expected for almost all of the words, L2 learners were performed unexpectedly with PU words. These results show that for both real and made-up words with APU stress (which maps on to stress in Tamil), L2 learners were able to correctly predict stress target-like. However, for words with PU stress, L2 learners still placed stress word-initially, resulting in non-target-like performance.

If the data results for the PU words from Tasks 1, 2 and 3 are looked at individually, similar observations are seen. All L2 speakers (beginner, intermediate and advanced) placed stress on the penultimate syllable to a lower extent than native speakers. These results are in line with Full transfer, confirming that L1 Tamil stress patterns are transferred to the L2 English. The L2 learners, to some extent, are using word-initial stress from the L1 Tamil to predict stress in the L2 English, rather than weight sensitivity cues. However, these results are not entirely surprising as re-structuring stress patterns to use syllable weight was predicted to not be easy for L2 learners due to lack of clear input data. There is an abundance of words in the English input that have word-initial stress and very little positive evidence that stress is weight sensitive.

7.3 Effects of Proficiency Levels on L1 Transfer

The next part of the study aimed to investigate whether L2 learners with increased proficiency can overcome L1 transfer effects. Based on Full Access, it was predicted that advanced learners, with increased exposure to L2 input data and increased proficiency, should be able to re-structure stress representations in English using weight sensitivity as a cue, as opposed to fixed word-initial stress as in Tamil. Advanced L2 learners should be able to correctly predict stress for both APU and PU stress words. This was tested by comparing the performances of L2 learners from three self-reported proficiency levels: beginner, intermediate and advanced.

To examine this, results from the three L2 proficiency groups were looked at in comparison to native speakers. For the APU words in Task 1, the advanced and intermediate L2 learners predicted stress as expected, almost target-like. With the PU words, the L2 learners collectively had a lower percentage of expected stress position. However, advanced L2 learners placed stress on the penultimate syllable as expected more often than intermediate L2 learners and the beginners, who unexpectedly placed stress on the first syllable most of the time. Similar observations were made for the made-up PU words in Task 2 and 3 – L2 learners had lower target-like performance for expected stress position compared to native speakers, but advanced L2 learners still performed the most expected out of all the proficiency groups, followed by intermediate L2 learners and beginners with a significantly lower percentage of words with expected stress position compared to intermediate and advanced L2 learners. It is important to keep in mind that these proficiency levels were self-reported, and participants were not tested for their English proficiency levels. Additionally, most of these intermediate and advanced L2 learners reported more frequent interactions with native English speakers in comparison to beginner L2 speakers, which would increase their exposures to the input data. In line with Full

Access, these results confirm the hypothesis that with increased exposure to L2 input and increased proficiency levels, L2 learners can overcome effects of L1 Tamil transfer of stress patterns and acquire L2 English stress patterns.

Additionally, it is seen that for the APU words in Task 2 and 3, the advanced speakers performed more as expected in comparison to the native speakers. A possible explanation for this could be stress variation in English and stress doublets. Garcia (2019) explains how weight sensitivity cues are not always 100% reliable. Sometimes the stress position can vary across native speakers, and one account for this is stress doublets – where words can interchangeably place stress on more than one syllable without changing the meaning (Tokar, 2017). In this case, because Task 2 and 3 used English pseudowords (non-existing words in the English vocabulary but still follow sound patterns of existing English words), it is possible that the native speakers mapped these words onto existing words in English which have stress doublets. This may have resulted in unexpected stress positions in Task 2 and 3. However, the advanced L2 learners performing more as expected could have been because these speakers were completely following weight-sensitivity rules, rather than mapping pseudowords onto existing real words.

Overall, the results from Task 1, 2 and 3 across all L2 proficiency groups are in line with previous studies which looked at the acquisition of English stress patterns by speakers of various L1s. Similar to the findings from the Archibald (1993b) and Jaiprasong and Pongpairoj (2020) studies, the results from this study showed that although the effects of L1 Tamil transfer are stronger during earlier stages of proficiency, this weakens as learners are exposed to more L2 input and their proficiencies increase. This is evident in advanced L2 learners performing more target-like in comparison to intermediate L2 learners and beginner L2 learners predicting stress as expected for the least number of words.

7.4 Real vs. Pseudowords - Acquisition or Memorization

The third research question in the study aimed to address if L2 learners are target-like or near target-like in their production of stress, whether they have acquired the weight sensitivity rules or whether this is a result of memorization from the input. This was tested by comparing L2 learners' percentage of expected stress position in real versus nonce words. In general, it was seen that all L2 learners (beginner, intermediate and advanced) placed stress more correctly in real words in comparison to pseudowords for both APU and PU stress words. Unsurprisingly, these differences were greater for the PU words (where stress patterns from the L1 cannot be used to correctly predict stress) than the APU words for lower proficient L2 learners (beginner and intermediate). A higher percentage of expected stress position for real words can to some extent, be a result of memorization and imitation of target-like pronunciations from the input data. If these words are frequent within the L2 learner's environment, where they constantly hear these words from native speakers with target-like pronunciations, it is possible that production is merely from memorization rather than the actual acquisition of stress assignment based on weight sensitivity.

It is also important to note that, although there is the possibility of L2 learners performing target-like due to memorization, the L2 beginners still incorrectly placed stress for a high number of real PU words. This could suggest that the chosen target words for Task 1 may have lower occurrence within the English input data. Because L2 beginners generally have lower exposure to input data, L1 transfer effects along with unfamiliarity with some of these real words could have led to a low percentage of expected stress position.

Overall, the results between the real versus pseudowords show that despite that performance was more target-like for the real words in comparison to the pseudowords, there was also an effect of proficiency that was seen in Task 2 and 3 for the PU words, which must mean that weight-sensitivity is being acquired.

7.5 Task Effects – Production vs. Perception

The last part of the study aimed to investigate whether there were any differences between the ability to produce versus perceive stress assignment correctly among the L2 learners. In other words, if L2 learners produced pseudowords with unexpected stress placement, was this a result of not acquiring weight sensitivity cues in English or difficulties/barriers in production? This was tested by comparing the L2 learners' performance on a production (Task 2) versus perception (Task 3) task using nonce words. The inclusion of a third task, which required the participants do a different activity (choosing a word rather than pronouncing it), also removes any task effects such as mental fatigue. Results showed that there were no differences between Task 2 and 3 for the APU words across all L2 learners, and PU words for beginner L2 learners. However, for PU words, the intermediate and advanced L2 learners predicted stress as expected for a higher percentage of words in Task 3 compared to Task 2. These observations can be accounted for by three possible explanations.

One explanation is performance pressure. In Task 1 and 2, participants were asked to pronounce the words, which automatically put performance pressure on the participants, as they were required to say the word-out loud at the very moment. However, with Task 3, participants were given two audio-recordings and asked to choose the correct pronunciation. With this task, there is no performance pressure because the audio recordings can be played any number of times and participants had the space to think about their answer before making a choice.

Another reason for the difference in expected performance between Task 2 and 3 can be due to a gap between production and perception of stress patterns. To recap, this difference was seen for PU words in intermediate and advanced L2 learners, but not the beginner L2 learners. This could be because the beginner learners have not actually acquired the rules of weight sensitivity for stress patterns in English. However, with the other two proficiency groups, it is possible that they have acquired and internalized weight sensitive stress patterns in English, which is seen with more target-like performance in Task 3. However, this gap between being able to perceive the correct stress versus producing it may arise from difficulties in production. A similar observation was made by Archibald (1993b) in a study with L1 Spanish speakers learning to speak English as an L2. With their native language being Tamil, which almost always has word-initial stress, these speakers have become accustomed to pronouncing words with word-initial stress patterns. This may be hard for them to unlearn. Therefore, not producing penultimate stress may be a result of a production difficulty for these speakers.

The third explanation is that this is a conscious style of pronunciation. It is possible that the style of pronunciation that arises from the transfer of Tamil stress patterns to English is being maintained to keep one's social and national identity. In a paper by Canagarajah (2006), the author states that sometimes, L2 learners maintain their variety of an L2 or adapt to a variety of an L2 depending on the environment they are immersed within and the individuals they interact with. It is used as a way of expressing group solidarity (Canagarajah, 2006). Based on the results from the participant questionnaire, it is seen that most of the L2 learners in this study continue to be engaged in settings, such as their homes, work, friends' circle, school, neighbourhood and community gatherings, where they constantly interact with other L1 Tamil L2 English speakers. Therefore, it is possible that this '*Tamilish*´ style of pronunciation is being spoken to maintain their social identity and connect with other similar speakers in the community. As a result, it is possible that they have acquired that English stress is sensitive to syllable weight, as is shown by the results from Task 3, but still choose to pronounce words with a '*Tamilish´* accent to keep their social identity. It is also important to note that the way someone speaks is highly dependent on their interlocutor. For this study, the participants completed the tasks in their own time and there is a possibility that they didn't consciously process that the researcher (native speaker) would be listening to their recordings. Therefore, there is a possibility that the same results would not have been obtained – speaking in a '*Tamilish'* way – if the participant completed the tasks in the presence of the researcher, who they understood was a native English speaker.

7.6 Individual Words and Participants

The last section of this discussion will address any observations that were made from the data which looked at the results of individual words and participants. For Task 1, two native speakers produced '*director'* with APU stress, as opposed to PU stress. This is an example of a stress doublet, as the position of the stress is interchangeable without changing the meaning of the word. When the stress falls on the PU syllable, '*director'* is pronounced with the following IPA pronunciation /də**rɛk**tər/. However, when the stress falls on the APU syllable, the following IPA pronunciation /**daɪ**rɛktə/ results. This is also seen with 50% of the L2 learners, who may have heard '*director'* with APU in their input data. Another interesting observation from Task 1 is that 80% of the L2 learners produced '*vanilla'* with APU stress. One possible explanation for this is that '*vanilla*' is a loanword in Tamil. Loanwords are lexical borrowings from language A, which are integrated into language B with little or no modification (Kang, 2013), except for their pronunciation which is adapted to match the phonological rules of the borrowing language. Usually, loanwords are not translated in the language they are integrated into (Kang, 2013). So, in this particular case, it may be that these L2 learners started using loanwords such as '*vanilla*' with stress on the first syllable before they even started learning English. Therefore, the way they are used to pronouncing *‘vanilla’* may be hard to unlearn, even with acquiring English as an L2.

In Task 2, more native speakers and L2 learners placed stress on the PU syllable rather than the APU syllable for words such as ‘*maldony*’ and ‘*polidy’*. This doesn’t seem to be a case of L1 transfer since the expected stress position (i.e. word-initial) is in line with stress in Tamil. However, more speakers were observed to place stress on PU syllable instead. There are two possible explanations for this. First, as with ‘*director’*, this may be due to these nonce words resembling stress doublets in English, where alternating stress positions don’t change the meaning of the word. Another possible explanation is how the nonce words were spelled. The deep orthography of English is often a challenge to L2 learners because of its irregularities (Miller, 2019). With consonants, many letters can represent one sound, while on the other hand, many sounds can also correspond to one letter. (Miller, 2019). Additionally, English orthography also has vowel alternations between long and short vowels and reduced vowels (i.e. schwa [ə]). These inconsistencies present difficulties for L2 learners and maybe even for native English speakers in this case, as Task 2 and 3 present nonce words. For instance, the word ‘*maldony’* could be pronounced as [**mǽl**dəni] (with APU stress and vowel reduction in the second (PU) syllable) or [məl**dów**ni] (with PU stress and vowel reduction in the first (APU) syllable and a diphthong in the second (PU) syllable). As a result, a change in vowel quality goes hand in hand with a change in placement of stress. Therefore, because these tasks were visual (i.e. participants were presented with the words on the screen), possible influences from English orthography may have altered stress placement for some of these words among the participants. For the PU words, more than 60% of the L2 learners placed stress unexpectedly for the words *‘faminzel’, ‘padilla’, ‘fenama’, ‘pecilli’* and ‘*salindi’*. These unexpected APU stress pronunciations are probably a result of L1 Tamil transfer effects, since native speakers didn’t have issues with these words. Another reason why these particular PU words may have received more APU stress in comparison to the other PU words could be because of word syllabification. For instance, if the word '*faminzel'* is syllabified as '*fam-in-zel'* as opposed to '*fa-min-zel'*, there is a higher chance that this word would receive APU stress.

For Task 3, the number of APU words for which the version with the unexpected stress assignment was chosen was low, both for the native speakers and L2 learners. However, for the PU words, more than 70% of the L2 learners chose the unexpected APU stress pronunciation for the words *'femestic'*, *'tamingo'* and '*opender'*. The word '*opender'* is an interesting case because native speakers chose the version with APU stress for this word as well, rather than PU stress. A possible explanation for this could be that the speakers were able to identify an existing English word, 'open', with the word '*opender'.* This is in line with Selinker's (1992) argument, discussed in Section 2.2. To recap, Selinker argues that English words are listed in the lexicon stressed. When there is a word that is morphologically complex, the stress position of the word relies on the stress of its embedded (or parent) lexical form. This seems to be the case for '*opener'* as well. The embedded lexical form within '*opender'* is '*open',* which has initial syllable stress. Therefore, it is possible that the APU pronunciation, which has word-initial stress similar to *'open*', sounded the most correct to both the L2 learners and native speakers.

When the results of individual speakers were compared, it was seen that overall, native speakers generally performed the same across all three tasks. The same observation was made for L2 beginner and intermediate speakers as well, with the exception of the beginner learner L2-5 and intermediate learner L2-6. For these two L2 learners, it was seen that for the PU words, both speakers had higher percentages of expected stress for Task 1, in comparison to Task 2 and 3. These observations suggest that for the real words in Task 1, the L2 learners' expected production may have been merely a result of memorization from the input data, rather than the acquisition of weight sensitivity rules – as discussed in Section 7.3.

Lastly, for the advanced L2 learners, it was seen that L2 learners L2-2, L2-7 and L2-8 had higher percentage of words with expected stress compared to learners L2-9 and L2-10. When the demographics were looked at for these speakers, it is seen that speakers L2-2 and L2-7 are L2 learners who started learning English at the ages of 12 and 11 respectively. This may be a reason for their near native-like performance, as age of onset or age of arrival can also play a role in second language acquisition. A study by Flege, Yeni-Komshian & Liu (1999) investigated whether there is a critical period for L2 acquisition. They investigated this by testing 240 Korean speakers who arrived in the US between the ages of 1 and 24. From the study findings, it was seen that 'accent' ratings and 'morphosyntax' grammar scores seem to decline with age of arrival. This may be a similar case in this current study here as well. Although all the speakers in this group self-reported as "advanced", participant L2-2 and L2-7 may be able to produce more target-like stress because of their earlier age of arrival, compared to the other advanced speakers.

What is more surprising in these observations is that participant L2-8 performed the most target-like across all three tasks in comparison to the rest of the advanced L2 learners. When the demographics for participant L2-8 was examined, it was seen that they did not have an early age of arrival either. However, it was noted on the questionnaire that participant L2-8 has been an English teacher for over 20 years now. Therefore, their exceptional performance on these tasks may be a result of explicit instruction. It has been found that in second language acquisition, explicit instruction can be useful for language learning. Explicit instructions about a language can be used to parse the input (Terrell, 1991), notice features (Schmidt, 1990), understand a rule and help production (Leow, 2015) and arrive at correct target-like production. If participant L2-8 was exposed to explicit instructions while becoming an English teacher, this would have helped parse L2 input for PU stress, notice weight sensitivity cues about stress and apply these rules, resulting in native-like productions.

7.7 Study Limitations

In this section, the possible shortcomings encountered during the course of this research study will be discussed. This is important to highlight as this will inform future research studies of areas that need to be addressed. The first limitation of the study is the sample size of participants. For this study, ten native English speakers and 14 L1 Tamil L2 English learners – three beginners, five intermediates and six advanced speakers – were recruited. A larger sample size, with more participants across the proficiency groups, would provide more diversity and be able to give more insight into L2 acquisition of stress patterns and possible factors that play a role in acquisition. A larger sample size would also allow for a statistical analysis of the results.

Another limitation to the study is the lack of tested and proven proficiency scores for the L1 Tamil L2 English speakers. For the current study, L2 learners were asked to self-report their speaking and writing proficiencies on the questionnaire. There is a possibility that participants may vary from one another on how they define English proficiency levels. This may have led to participants being placed in an incorrect proficiency group. Additionally, factors such as 'age of arrival' or 'number of years in Canada' cannot be solely used as reliable indicators of proficiency levels, as other factors, such as level exposure to native English speakers and input data come into play as well. Therefore, for future studies, adding an English proficiency test to the study design will allow for more accurate grouping of L2 learners.

7.8 Future Research Studies

Future research studies, which examine the L2 acquisition of English stress by native L1 Tamil speakers, can enhance the methodology of the study by increasing the sample size of participants, recruiting more L2 learners across the different proficiencies and including an English proficiency test.

Future studies can also incorporate other factors which play a role in target-like second language acquisition. In this current study, the two factors which were examined were L1 transfer effects, and whether these effects can be overcome with increased exposure to input data. This was examined by testing L2 learners of different levels of English proficiencies – beginner, intermediate and advanced. As discussed in Section 7.5, other factors that could be examined for future studies include age of onset or age of arrival and effects of explicit instruction. For instance, future studies can focus on just advanced L2 learners with differing age of arrivals to see whether that plays a role in the target-like acquisition of English stress patterns. Additionally, future studies could also focus on only beginner L2 learners, who show strong effects of L1 transfer. These learners can be subjected to explicit instruction on English stress patterns, after which they can be tested on their ability to correctly predict stress as expected in English real and nonce words with penultimate stress. One factor that wasn't looked at in this study, which can be investigated in the future, is the frequency of the real target words which were used. In this study, the results showed that beginner L2 learners predicted PU stress as expected for a low percentage of words. This may have been due to their unfamiliarity with the words and the inability to use memorization as a result. Future studies can investigate this by presenting beginner L2 learners with high frequency versus low frequency real target words to examine whether they use memorization to correctly predict stress at any point.

Section 7.4 discussed how the way an individual speaks is highly dependent on their interlocutor. As a future research idea, it would be interesting to investigate the differences in the ways an L2 learner places stress when completing the study in various settings – i.e. on their own, with a group of other native Tamil L2 English learners, with a group of native English speakers, in front of a native English speaking researcher or in the presence of a native Tamil speaking researcher. This would give insight as to whether stress placement changes based on the social environment the L2 learner is immersed in.

Lastly, future studies can also investigate the L1 transfer of Tamil during L2 stress acquisition of other L2 languages. One possible L2 language to look at is French. French is similar to Tamil in that, stress patterns are fixed and predictable but differs in which syllable the stress falls on. While Tamil has word-initial stress, in French, stress is placed on the last vowel of the word, unless the vowel is a schwa /ə/, in which case, the penultimate vowel is stressed. (Walker, 1975). Unlike Tamil and English, where there is an overlap of stress assignment (word-initial), making it difficult to parse weight sensitivity from the input data, in French and Tamil, there is no overlap. Therefore, L2 learners would have an easier time noticing stress assignment rules in French L2 data but would also have to unlearn word-initial stress from the L1 Tamil. This topic can be investigated using native Tamil speakers who have immigrated to places such as France or Quebec, Canada in their late childhood, adolescence or adulthood.

These future studies can build on the current findings of this study and further contribute to the area of L1 Tamil transfer to L2 English, but also to the broader area of Second Language Acquisition that focuses on L1 transfer of stress patterns to the L2,

8. CONCLUSION

Within the field of Generative Second Language Acquisition, which focuses on how L2 knowledge is represented in the mind, one theory that focuses on obstacles encountered during L2 acquisition is the Full Transfer Full Access Hypothesis. With the FTFA Hypothesis, Schwartz and Sprouse (1996) propose that an L2 learner's initial state of L2 acquisition is comprised of the L1 grammar (Full Transfer). As the L2 learner is exposed to more L2 input, if the L1 representations don't fit the L2 input, this will re-enforce re-structuring of the representations and L2 learners will have access to Universal Grammar (UG), as they did in L1 acquisition (Full Access). This study looked at the L2 acquisition of English stress patterns by L1 Tamil L2 English speakers. While English stress can be predicted by weight sensitivity rules, Tamil has word-initial stress. The aim of this study was to investigate whether L2 speakers showed effects of L1 Tamil transfer during stress assignment. Furthermore, with higher proficient speakers, this study investigated whether the effects of L1 transfer can be overcome with increased exposure to the L2 input data.

Using the performance of native English speakers as a baseline control, results from the L2 speakers showed that in comparison to the native speakers, there was a lower percentage of expected stress assignment for tri-syllabic words with penultimate stress, where stress doesn't fall word-initial similar to Tamil. Additionally, results showed that among the three proficiency groups – beginner, intermediate and advanced – expected stress assignment improved with increasing proficiency. These results were in line with the Full Transfer Full Access Hypothesis – although L1 Tamil L2 English speakers tended to show stronger effects of L1 Tamil transfer during early stages of L2 acquisition of English stress, these effects weakened with increasing proficiency and increasing exposure to the L2 input data. Furthermore, a comparison of the results between the different tasks and individual words and participants showed that some differences in performance may have arisen from factors such as performance pressure, a gap between perception and production of stress, maintaining a social identity, stress doublets, inconsistencies in English orthography, frequency of words in the English data, age of onset/arrival and explicit instruction. Building on the current findings of this study, these factors suggest potential directions for future research studies.

REFERENCES

Altmann, H. (2006). The perception and production of second language stress: A cross -linguistic experimental study (Order No. 3220627). Available from ProQuest Dissertations & Theses Global; ProQuest Dissertations & Theses Global Closed Collection. (305322624). https://ezproxy.library.yorku.ca/login?url=https://www.proquest.com/dissertations-theses/perception-production-second-language-stress/docview/305322624/se-2

Anani, M. (1989). Incorrect stress placement in the case of Arab learners of English. IRAL - International Review of Applied Linguistics in Language Teaching, 27(1). https://doi.org/10.1515/iral.1989.27.1.15

Archibald, J. (1993a). Language learnability and L2 phonology: the acquisition of metrical parameters. Dordrecht, Boston, London: Kluwer Academic Publishers.

Archibald, J. (1993b). The learnability of English metrical parameters by adult Spanish speakers. International Review of Applied Linguistics in Language Teaching, IRAL, 31(2), 129–142. https://doi.org/10.1515/iral.1993.31.2.129

Armstrong, E. (n.d.). Tamil and Tamil English Accent - York University. https://www.yorku.ca/earmstro/southasia/tamil/Tamil_Overview.pdf

Canagarajah, S. (2006). Changing communicative needs, revised assessment objectives: Testing English as an international language. Language Assessment Quarterly, 3(3), 229–242. https://doi.org/10.1207/s15434311laq0303_1

Flege, J. E., Yeni-Komshian, G. H., & Liu, S. (1999). Age constraints on second-language acquisition. Journal of Memory and Language, 41(1), 78–104. https://doi.org/10.1006/jmla.1999.2638

Garcia, G. D. (2019). Language transfer and positional bias in English stress. Second Language Research, 36(4), 445–474. https://doi.org/10.1177/0267658319882457

Hayes B (1982) Extrametricality and English stress. Linguistic Inquiry 13: 227–76.

Jaiprasong, S., & Pongpairoj, N.. (2020). L2 Production of English Word Stress by L1 Thai Learners. LEARN Journal: Language Education and Acquisition Research Network, 13(2), 142–157. Retrieved from https://so04.tci-thaijo.org/index.php/LEARN/article/view/243699

Kabak, B., & Meemann, K. (2013). The role of positive vs. negative evidence in learning a novel dialect pattern: American English speakers' grammatical intuitions on a-prefixing in Appalachian English. Zeitschrift Für Anglistik Und Amerikanistik, 61(3), 287–306. https://doi.org/10.1515/zaa-2013-0306

Kang, Y. (2013). Loanword phonology. The Blackwell Companion to Phonology, 1–25. https://doi.org/10.1002/9781444335262.wbctp0095

Keane, E. (2006). Prominence in Tamil. Journal of the International Phonetic Association, 36(1), 1–20. https://doi.org/10.1017/s0025100306002337

Kijak, A. (2009). How stressful is L2 stress?: A cross-linguistic study of L2 perception and production of Metrical Systems. LOT.

Leow, R. (2015). Explicit learning in the L2 classroom: A student-centered approach.New York, NY: Routledge.

Liberman M and Prince A (1977) On stress and linguistic rhythm. Linguistic Inquiry 8: 249–336.

Miller, R. T. (2019). English orthography and reading. The TESOL encyclopedia of English language teaching, 1(7).

Ortega, L. (2013). Understanding second language acquisition. Routledge.

Rothman, J., & Slabakova, R. (2017). THE GENERATIVE APPROACH TO SLA AND ITS PLACE IN MODERN SECOND LANGUAGE STUDIES. Studies in Second Language Acquisition, 40(2), 417–442. doi:10.1017/S0272263117000134

Schmidt, R. (1990). The role of consciousness in second language learning. Applied Linguistics, 11, 127–158.

Schwartz, B. D., & Sprouse, R. A. (1996). L2 cognitive states and the full transfer/full access model. Second Language Research, 12(1), 40–72. https://doi.org/10.1177/026765839601200103

Selinker L (1972) Interlanguage. IRAL – International Review of Applied Linguistics in Language Teaching 10: 209–32.

Selkirk E (1980) The role of prosodic categories in English word stress. Linguistic Inquiry 11: 563–605.

Sluijter, A. M. C. (1995). Phonetic correlates of stress and accent. Holland Academic Graphics.

Thomas, C. V. (2011). Malayali - English Pronunciation: With Special Reference to the Impact of Spelling. The Criterion: An International Journal in English, II(Iv). https://doi.org/ISSN-0976-8165

Terrell, T. (1991). The role of grammar instruction in a communicative approach. The Modern Language Journal, 75, 52–63.

Tokar, A. (2017). Stress variation in English. Narr Francke Attempto.

Walker, D. C. (1975). Word Stress in French. Language, 51(4), 887–900. https://doi.org/10.2307/412699

White, L. (2003). The initial state. In Second Language Acquisition and Universal Grammar (pp. 58–99). chapter, Cambridge: Cambridge University Press.

APPENDIX A: Participant Questionnaire

***Note:** Native English speakers only answered questions (1-7) in the questionnaire.

PARTICIPANT QUESTIONNAIRE

Thank you for taking part in this Linguistics project on Second Language Acquisition. Before we wrap up the study, I would like you to complete the following participant questionnaire, so I can get to know a little bit about you and your exposure to different languages. All responses will be kept confidential and used anonymously for the purposes of this study only.

Please answer the following questions to the best of your ability. If you don't feel comfortable in answering any of the questions, it can be left blank.

(1) To which gender identity do you most identify with?

- ○ Female
- ○ Male
- ○ Transgender Female
- ○ Transgender Male
- ○ Gender Variant / Non-conforming
- ○ Prefer Not to Answer
- ○ Other - please specify:

(2) What is your age? (years)

(3) Where were you born?

(4) If you were born outside of Canada, at what age did you move to Canada?

(5) Where did you grow up during most of your childhood and adolescence?

(6) Have you lived in any other countries? If yes, please specify where and for how long: (Please answer in the following format - **Country, Number of Years**)

(7) What is your first language?

(8) What other languages do you speak? At what age did you start learning these languages? (Please answer in the following format - **Lanugage, Age**)

(9) How often were you exposed to English before moving to Canada?

Never	Only passively (Through TV, media & listening)	Monthly	Weekly	Daily

Please specify in what way:

(10) At what age did you start learning English? (years)

(11) What would you say your speaking proficiency (level) in English is?

Beginner	Intermediate (middle)	Advanced

(12) What would you say your writing proficiency (level) in English is?

Beginner	Intermediate (middle)	Advanced

(13) Do you interact with other native Tamil speakers, who learned/are learning to speak English as a second language? If yes, where do you interact with them, and how often?

	Every-day	Few times a week	Once a week	Few times a month	Once a month	Few times a year	Never
Home	○	○	○	○	○	○	○
Work	○	○	○	○	○	○	○
School	○	○	○	○	○	○	○
Neighbourhoo	○	○	○	○	○	○	○
With friends	○	○	○	○	○	○	○
Community/ family gatherings	○	○	○	○	○	○	○
Other	○	○	○	○	○	○	○

(14) Do you interact with native English speakers? If yes, where and how often?

	Every-day	Few times a week	Once a week	Few times a month	Once a month	Few times a year	Never
Home	◯	◯	◯	◯	◯	◯	◯
Work	◯	◯	◯	◯	◯	◯	◯
School	◯	◯	◯	◯	◯	◯	◯
Neighbourhoo	◯	◯	◯	◯	◯	◯	◯
With friends	◯	◯	◯	◯	◯	◯	◯
Community/ family gatherings	◯	◯	◯	◯	◯	◯	◯
Other	◯	◯	◯	◯	◯	◯	◯

End of Questionnaire

Next

APPENDIX B: Task 1 Target Words

*Note: **Bolding** or accent mark (́) on the IPA notation indicates the stressed syllable

Syllable Stress	Target Words	IPA Pronunciation
APU Stress	**bro**.cco.li	/**brɑ́**.kə.li/
	di.no.saur	/**dáɪ**.nə.sɔr/
	oc.to.pus	/**ɑ́k**.tə.pʊs/
	can.ta.loupe	/**kǽn**.tə.loʊp/
	el.e.phant	/**ɛ́l**.ə.fənt/
	ra.di.o	/**réɪ**.di.oʊ/
	u.ni.corn	/**jú**.nɪ.kɔrn/
	a.ni.mal	/**ǽ**.nə.məl/
	ar.ti.cle	/**ɑ́r**.tə.kəl/
	bal.co.ny	/**bǽl**.kə.ni/
	cri.mi.nal	/**krɪ́**.mə.nəl/
	mar.a.thon	/**mɛ́r**.ə.θɑn/
	stra.te.gy	/**strǽ**.tə.ʤi/
	ba.ke.ry	/**béɪ**.kə.ri/
	fac.to.ry	/**fǽk**.tə.ri/
	beau.ti.ful	/**bjú**.tə.fəl/
	ca.pi.tal	/**kǽ**.pə.təl/
PU Stress	ba.**na**.na	/bə.**nǽ**.nə/
	a.**gen**.da	/ə.**ʤɛ́n**.də/
	po.**ta**.to	/pə.**téɪ**.toʊ/
	fla.**min**.go	/flə.**mɪ́ŋ**.goʊ/
	com.**pu**.ter	/kəm.**pjú**.tər/
	ci.**vil**.ian	/sə.**vɪ́l**.jən/
	di.**rec**.tor	/də.**rɛ́k**.tər/

	to.**ma**.to	/tə.**meɪ**.toʊ/
	to.**ba**.cco	/tə.**bǽ**koʊ/
	va.**nill**.a	/və.**nɪ́l**.ə/
	co.**llec**.tor	/kə.**lɛ́k**.tər/
	a.**ppen**.dix	/ə.**pɛ́n**.dɪks/
	con.**fu**.sion	/kən.**fjú**.ʒən/
	co.**rrec**.tion	/kə.**rɛ́k**.ʃən/
	pa.**pay**.a	/pə.**páɪ**.ə/
	va.**ca**.tion	/və.**kéɪ**.ʃən/
	vol.**ca**.no	/vɑl.**kéɪ́**.noʊ/

APPENDIX C: Task 2 Target Words

Predicted Syllable Stress	Target Words	IPA Pronunciation
APU Stress	**am**.bi.lin	/**ǽm**.bə.lɪn/
	pel.e.tin	/**pɛ́l**.ə.tɪn/
	fan.i.fal	/**fǽn**.ə.fəl/
	la.si.o	/**lǽ**.si.oʊ/
	fab.e.ry	/**fǽb**.ə.ri/
	nom.i.cal	/**nɑ́m**.ə.kəl/
	mal.do.ny	/**mǽl**.də.ni/
	pol.i.dy	/**pɑ́l**.ə.di/
	los.pi.dal	/**lɑ́s**.pɪ.dəl/
	fel.co-ny	/**fɛ́l**.cə.ni/
PU Stress	mon.**rad**.o	/mən.**rǽd**.oʊ/
	fa.**min**.zel	/fə.**mɪ́n**.zəl/
	pe.**fen**.der	/pə.**fɛ́n**.dər/
	a.**ppen**.del	/ə.**pɛ́n**.dəl/
	pa.**dil**.a	/pə.**dɪ́l**.ə/
	fe.**nam**.a	/fə.**nǽm**.ə/
	pe.**cill**.i	/pə.**cɪ́l**.i/
	re.**den**.tial	/rə.**dɛ́n**.ʃəl/
	me.**may**.a	/mə.**máɪ**.ə/
	sa.**lin**.di	/sə.**lɪ́n**.di/

APPENDIX D: Task 3 Target Words

Predicted Syllable Stress	Target Words	IPA APU Pronunciation	IPA PU Pronunciation
APU Stress	**fen**.e.my	/**fɛ́n**.ə.mi/	/fə.**nɛ́m**.i/
	ro.ti.cal	/**rɑ́**.də.kəl/	/rə.**tɪ́k**.əl/
	ber.ni.cle	/**bɜ́r**.nə.kəl/	/bər.**nɪ́k**.əl/
	pac.te.ri	/**pǽk**.tə.ri/	/pək.**tɛ́r**.i/
	fan.ti.nel	/**fǽn**.tə.nəl/	/fən.**tín**.əl/
	mus.ti.fy	/**mɑ́s**.tə.faɪ/	/məs.**tí**.faɪ/
	som.i.nate	/**sɑ́m**.ə.nǽt/	/sɑ.**mí**.nǽt/
	fel.i.cate	/**fɛ́l**.ə.kət/	/fə.**lí**.kət/
	ros.i.tive	/**rɑ́s**.ə.dɪv/	/rə.**sí**.dɪv/
	loon.i.ty	/**lún**.ə.di/	/lə.**nɪ́**.di/
PU Stress	tre.**fen**.dous	/**trɛ́f**.ən.dəs/	/trə.**fɛ́n**.dəs/
	de.**man**.da	/**dɛ́m**.ən.də/	/də.**mǽn**.də/
	e.**fus**.er	/**ɛ́f**.ju.zər/	/ə.**fjúz**.ər/
	e.**pen**.der	/**ɛ́p**.ən.dər/	/ə.**pɛ́n**.dər/
	de.**man**.tic	/**dɛ́m**.ən.tɪk/	/də.**mǽn**.tɪk/
	fe.**mes**.tic	/**fɛ́m**.əs.tɪk/	/fə.**mɛ́s**.tɪk/
	o.**pen**.der	/**óp**.ən.dər/	/o.**pɛ́n**.dər/
	ta.**min**.go	/**tǽm**.ɪŋ.goʊ/	/tə.**mɪ́ŋ**.goʊ/
	mi.**rec**.tor	/**máɪ**.rɛk.tər/	/mə.**rɛ́k**.tər/
	mer.**lon**.da	/**mɛ́r**.lən.də/	/mər.**lɑ́n**.də/

APPENDIX E: Sample Stimuli from Task 1, 2 and 3

WELCOME TO THE STUDY

The following study aims at researching how second language speakers learn English words. This study will be piloted with Native English speakers and conducted with Native Tamil speakers.

- The study consists of three parts and will take around 10-15 minutes to complete.
- Participation is voluntary and you have the option to withdraw at any time.
- Each part will be preceded by a short instruction.
- Please ensure to use headphones for the study, while sitting in a quiet space.

Thank you again for your participation!

Click here to begin

TASK 1 - Instructions

In this task, you will be asked to pronounce existing English words out-loud.

You will first be asked to test your microphone.

If you hear the feedback correctly, you can trust that your responses will automatically be audio-recorded when you start the task.

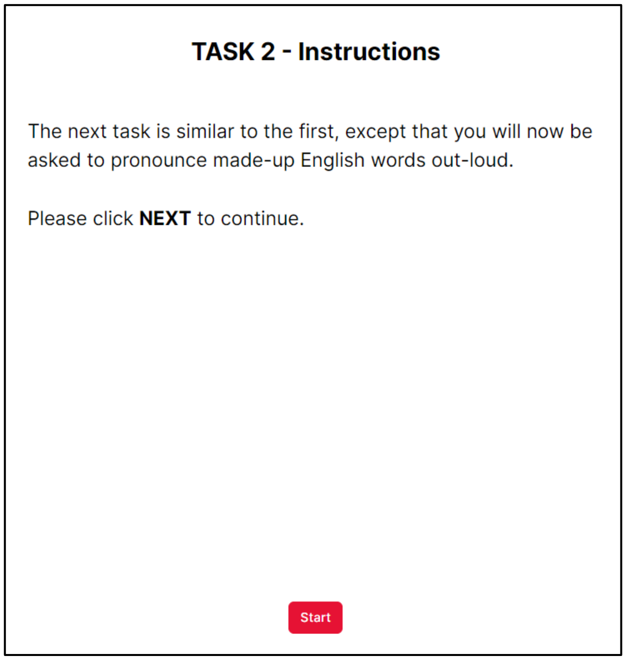
Please click **NEXT** to continue.

Start

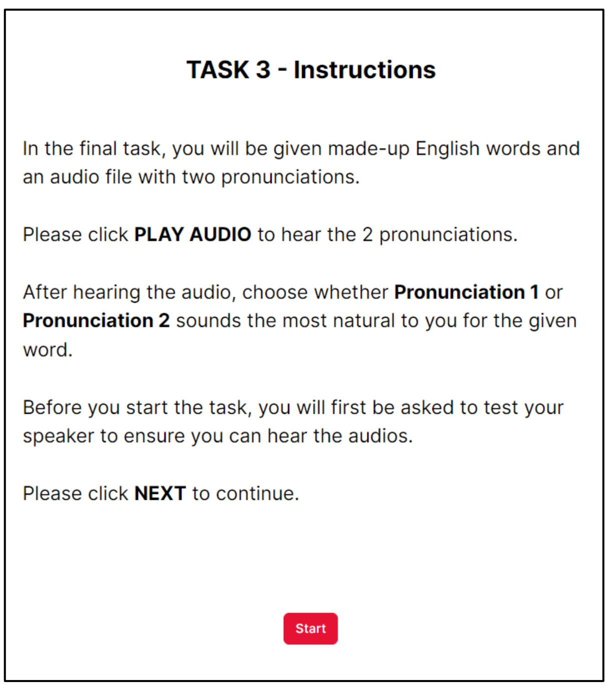
Please pronounce the following word:

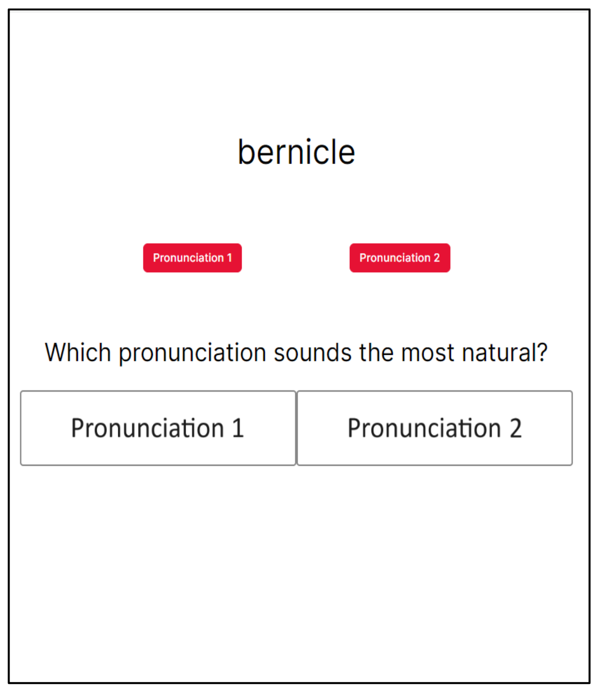
capital

Next


TASK 2 - Instructions
The next task is similar to the first, except that you will now be asked to pronounce made-up English words out-loud.
Please click NEXT to continue.
Start


Please pronounce the following word:
peletin
Next


TASK 3 - Instructions
In the final task, you will be given made-up English words and an audio file with two pronunciations.
Please click PLAY AUDIO to hear the 2 pronunciations.
After hearing the audio, choose whether Pronunciation 1 or Pronunciation 2 sounds the most natural to you for the given word.
Before you start the task, you will first be asked to test your speaker to ensure you can hear the audios.
Please click NEXT to continue.
Start


bernicle
Pronunciation 1
Pronunciation 2
Which pronunciation sounds the most natural?
Pronunciation 1
Pronunciation 2