Does Proficiency in the Second Language Influence Bilingual Word Retrieval and Pronunciation?

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Abstract- During empirical sociolinguistic research this correlational study statistically compares quantitative scores of an independent variable Proficiency in English against the quantified dependent variable Rate of occurrence of deviations from Standard Sri Lankan English (SSLE) pronunciation across the 185 users of Other Varieties of Sri Lankan Englishes. The participants diversified in their first language. 100 participants had Sinhala while the first language of 85 participants was Sri Lankan Tamil. a questionnaire cum word elicitation process compiled data. The instrument consisted of 25 lexical items which gave rise to pronunciation deviations compiled from literature on Sri Lankan English. Descriptive statistics posit that there is a negative correlation between the two variables while the percentage variance explained for the correlation between the variables was a medium 9% for the Sinhala and 24% for the Tamil bilingual participants. This study concludes that other exogenous factors too would have influenced the rate of occurrence of deviations from SSLE. Most importantly it informs pedagogy that devoid of the diversity of the first languages Sinhala and Tamil, Proficiency in English influences deviations from SSLE pronunciation which is the target of Teaching English as a Second Language in Sri Lanka.

Index Terms- Sri Lankan English, Sinhala. Tamil, pronunciation, Proficiency, Rate of occurrence of pronunciation deviations

I. INTRODUCTION

Tracing the contact dynamics of Sri Lankan English (SLE) the first exposure of the monolingual Sinhala/Tamil speech communities of Sri Lanka to English would have occurred as far back as in 1796 when the British East India Company annexed the maritime provinces of Ceylon. Thus the timeline for the evolution of SLE commenced with the linguistic interactions between the colonial rulers and Sinhala and Tamil monolinguals of the country. Then SLE progressed through exonormative stabilization, nativization and endonormative stabilization stages. It could be stated that at present SLE has passed the endonormative stage and has codified phonological norms, identified morphological, syntactic behaviour; defined standard usage and dialectal variation within the variety. This evolution of English within the linguistic ecology of Sri Lanka has taken place over a period of more than 200 years. This signifies the intense cross linguistic interference between English and the vernaculars as they began to coexist within the linguistic ecology of the country and contributed to variety formation and dialectal variation within the variety. The nativization of SBE pronunciation was a heterogeneous process which was influenced by the language specific markedness constraint rankings of the vernaculars Sinhala and Tamil. This resulted in the creation of a prestigious, norm forming variety SSLE and Other Varieties of Sri Lankan Englishes (OVSLEes). The adherence to SSLE phonological norms due to the influence of the parity in language specific markedness constraints of Sinhala/Tamil identifies Sinhala/Sri Lankan English (S/SSLE) and Tamil/Sri Lankan English (T/SSLE) bilingual speech communities respectively. Deviation from SSLE pronunciation identifies the users of OVSLEes. The participants of this investigation are bilinguals with Sinhala/OVSLE and T/OVSLE in their code repertoire. This study selects two variables Proficiency in SLE and Rate of occurrence of selected deviations from SSLE pronunciation and aims to investigate the correlation between them as well as ascertain whether the diversity in the first languages influence the correlation. This investigation is informed by theory on dual language lexical processing in bilinguals, their word retrieval mechanisms and how proficiency in the second language (L2) affects their pronunciation.

II. THE LITERATURE

2.1 Word retrieval and bilingual mental lexicon

Theorists (Abutalebi and Green, 2007[1]; Costa and Santesteban, 2004[2]; Fabbro, 2001[3]; Illes et al., 1999[4]; Sia & Dewaele, 2006[5]) state that the first stage of word retrieval in bilinguals is the accessing of mental lexicon. According to Costa et al (2000)[6] in bilinguals the conceptual information both in L1 and L2 is stored in one common conceptual store, regardless of the language of input. This common conceptual store is connected to the L1 and L2 lexical stores, which are also connected with each other (Centowska, 2006)[7]. Concurring Kroll (2008)[8] states that mental juggling which is necessary to negotiate the use of two languages is a natural outcome of bilingualism. If both languages are active and compete for selection, the bilingual then needs to acquire a mechanism that provides a means to control this activity and the corresponding decision process. Thus lexical production in a bilingual involves, when compared with a monolingual, a more complex dual language processing architecture.

2.2 Dual language lexical processing: The case of bilinguals

Discussing cross language lexical processes Linck et al (2008: 349)[9] states 'both languages are active when balanced bilinguals and second language learners are reading, listening, or speaking one language only'. They further state that 'The intention to use one language only does not suffice to restrict activation to one language and does not appear to be restricted to

a particular task' (ibid). Other current research (Colome, 2001[10]; Costa et al., 2000[11]; Costa et al., 2005[12]; La Heij, 2005[13]) on lexical selection in bilingual speech production theorizes that the two languages of a bilingual are activated in parallel. Simple production tasks such as naming a picture or reading a word engage cross-language activity in the mind of even highly proficient bilinguals (Costa, 2005[14]).

The models of bilingual language production theorize that the activation of common semantic representations for the two languages of a bilingual occurs at the conceptual non-linguistic level (Finkbeiner et al., 2002[15]; Li & Gleitman, 2002[16]; Kroll & Stewart, 1994[17]). Then, most researchers (Levelt et al, 1999[18]; Peterson and Savoy, 1998[19]; Tokowicz et al, 2002[20]) identify synonymous lexical node activation in the two languages. Furthermore this activation of the lexical system occurs regardless of the language programmed for response (De Bot, 1992[21]; Green, 1986[22]; Poulisse and Bongaerts, 1994[23]; Poulisse, 1997[24]). Neurological evidence is cited to prove that in the brain of a bilingual lexical nodes i.e., syntactically specified lexical concepts in different languages may compete for selection during a task schema which targets one language. A neuro-cognitive study by Abutalebi & Green (2007: 242)[25] adds support to the above notion and they state that,

Neural representation of a second language converges with the language learned as a first language and language production in bilinguals is a dynamic process involving cortical and subcortical structures which must manage competing phonological, syntactic and prosodic systems.

Due to this multiple activation Finkbeiner et al (2006: 153)[26] state that the bilingual speakers find it harder than monolinguals to access the target lexical node as each concept is associated with multiple synonymous lexical nodes. Tokowicz et al (2002)[27] note that many concepts, especially the concrete, are associated with translation equivalent lexical nodes in a bilingual's mind. If these translation equivalent lexical nodes share a common concept at the conceptual level, retrieving the lexical node that corresponds to the target concept from the translation equivalent lexical nodes will cause hardship. Finkbeiner et al (2006: 153)[28] state that,

If two translation equivalent lexical nodes are activated to roughly equal levels every time their shared semantic representation becomes activated the lexical selection mechanism should find it difficult to decide between the two.

The deciding processes are identified in literature as language specific and the language non-specific lexical selection models. Of the two this study surveys the latter as the participants of this study are weak learner bilinguals.

2.3 Proficient to weak learner bilinguals: language specific lexical selection to inhibition

Santesteban (2006: 119)[29] based on empirical research evaluating the different performance profiles of L2 learners and highly-proficient bilinguals have indicated that these two groups make use of qualitatively different language control mechanisms. More specifically, they propose that increase of the L2 proficiency level leads bilinguals to utilize language-specific selection mechanisms during lexical access. That is, while highly-proficient bilinguals' language control mechanisms will be flexible enough to allow them to use non inhibitory processes the language control mechanisms the L2 learners will struggle to guarantee selection in the response language by means of L1 inhibitory processes (Green, 1986a[30]; 1998a[31]).

2.4 Language non-specific lexical production and inhibitory control in L2 learners

Green (1998a)[32] proposed the Inhibition Control Model (ICM) in which competing potential outputs of the lexico-semantic system are inhibited depending on the goals of the speaker. Agreement comes from Linck et al (2008)[33] who state that during lexical production inappropriate responses such as words from the non target language are inhibited to prevent their production. The main tenet behind the ICM is that in bilinguals, recognition of linguistic information is not language-specific. This tenet is shared by a plethora of theorists. Green (1986a[34], 1998a [35]and b[36]) and de Bot & Schreuder (1993)[37] propose language non-selective models for lexical access and state that words from both languages are activated and compete for selection during lexical access. Finkbeiner & Caramazza (2006: 154)[38] and Costa & Santesteban (2004)[39] state that the language non-specific model allows competition for selection and candidates within and across languages actively compete with alternatives in the unintended language. All theorist cited above collectively agree that the non-target language lexical candidates are eventually inhibited to allow accurate production to proceed. Figure 1 below is an adaptation of Finkbeiner et al (2006a)[40] to suit the linguistic context of this study. It illustrates how the ICM explains lexical selection in bilinguals.

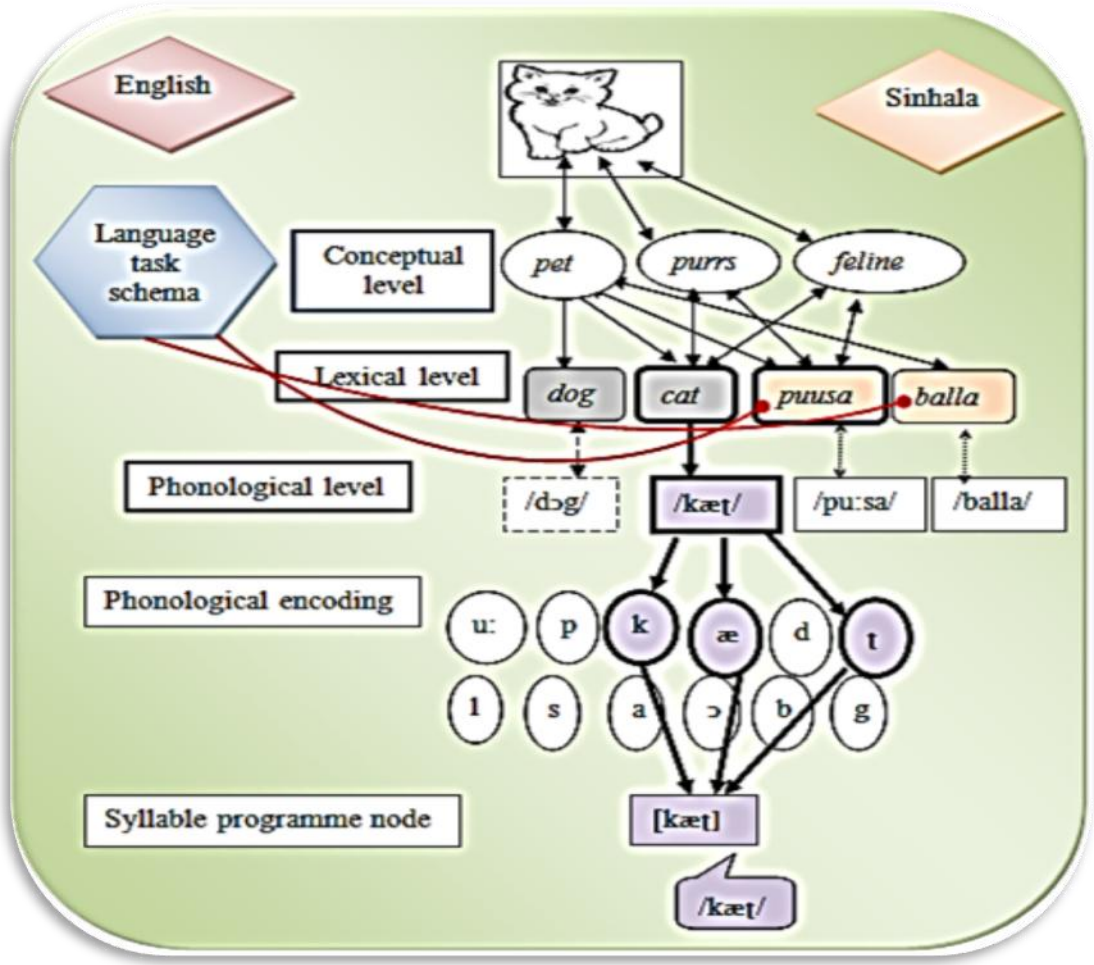

Figure 1: Inhibitory Control Model (Green, 1986a [41]; 1998a[42] and lexical processing in a Sinhala/SSLE bilingual Source: Adapted from Finkbeiner et al (2006a).

Semantic nodes Lexical nodes Phonological nodes

The arrows represent the flow of activation

The thickness of the circles and arrows indicate the level of activation

Inhibitory link

In the above example, an S/SLE bilingual names a picture of a *cat* in English. At visual onset of the picture, the semantic system sends activation to many lexical nodes of English and Sinhala (the target, its translation equivalent and a cohort of related words which are not included in the above illustration). At the lexical level, each word contains a language tag. From these lexical nodes those belonging to Sinhala are inhibited as specified by the task schema which commands that the speaker intention is to speak in English. Note that *puusa* the lexical translation of the word *cat* gets equal activation as *cat*. Note that *dog* and *balla* have an equal but lower number of semantic links and gain equal and low activation though they differ in language. On the other hand, though *dog* is in the same language as *cat* it has a lesser number of semantic links than the translation equivalent *puusa* the translation equivalent of *cat*. Thus the main activated contenders are *puusa* and *cat*. Then inhibiting *puusa* (the Sinhala equivalent for *cat*) from selection criteria based on the language task schema the bilingual selects the word *cat* based on its higher activation level when compared with *dog*.

But note that in the ICM processing steps of the cascading activation is temporally ordered but might overlap in time. This results in phonological nodes receiving activation before the conceptual activation is complete. Thus inhibition at lexical level will not prevent the phonological nodes of all lexical nodes getting activated.

2.5 Factors that influence bilingual lexical pronunciation

According to Flege et al (2003)[43] bilinguals are unable to fully isolate the L1 and L2 phonetic systems, which necessarily interact with one another during lexical pronunciation. Information pertinent to factors identified in literature as potentially important to L2 pronunciation includes constrained subsystems such as language specific markedness rankings that can be activated and deactivated to varying degrees. The faithfulness or violation processes permit and influence different modes of pronunciation in the L1 and L2. The nature, strength, and directionality of the influence may vary as a function of factors which includes: number and nature of phonic elements of the L1 and L2 and L2 proficiency (see Flege, 1995[44]; Flege et al., 2003[45] for other factors). Out of these factors that influence bilingual lexical pronunciation this study selects proficiency of L2 for empirical investigation as a predictor of pronunciation accuracy/inaccuracy during lexical production. Neurological evidence from literature which posits that the lexical processing of weak L2 bilinguals is conscious, effortful, takes more time and is more prone to errors is scaffolded below.

2.6 Neurological evidence for bilingual lexical pronunciation

2.6.1 The convergence theory

Neurological investigations conclude that producing spoken words, whether in isolation or in the context of a larger utterance, involve an extensive neural network (Indefrey and Levelt, 2004[46]). Most emerging studies which examine brain activity during lexical processing agree with the convergence theory which concludes that L2 is essentially processed through the same neural networks underlying L1 processing. Based on behavioral and fMRI evidence obtained from high proficient bilinguals Dijkstra & Van Heuven (2002)[47] too state that due to the convergence in the semantic processing systems for the two languages 'bilingual lexical processing leads to language conflict in the bilingual brain even when the bilinguals' task only required target language knowledge' (ibid: 175).

The participants were twenty-four Dutch–English bilinguals with a high English proficiency and a regular use of English and twelve English monolinguals. The study investigated how bilinguals perform on single word processing tasks when language based conflicts are induced by stimulus. The instruments consisted of a set of Dutch–English homographs and a set of matched English control words. The stimulus based language conflict was examined at diverse levels: phonology, semantic and language membership.

According to Dijkstra & Van Heuven (ibid: 179), Recognition of interlingual homographs will suffer from a stimulus-based language conflict, because 1) they belong to 2 languages; 2) they are semantically ambiguous; and 3) their pronunciation is different for each language.

The instrument, for example, contained the word *room*. At the level of phonology *room* in English is /ru:m/, and in Dutch it transcribes as /ro:m/. Semantically *room* in Dutch means *cream* and in English connotes the noun 'a part of a building', and at the different language membership level *room* is both a Dutch and an English word. Thus Dijkstra & Van Heuven (ibid) generated a response-based language conflict for Dutch–English bilinguals. The interlingual homograph *room* generated a conflict in the English Lexical Decision (ELD) task, as it is an English word as well as a Dutch word.

In ELD tasks, Dijkstra & Van Heuven (ibid: 180) state that 'participants were required to press a 'Yes' button when a presented letter string is an English word, and a 'No' button when the letter string is not an English word'. Dutch–English bilinguals reading an interlingual homograph as *room* during the ELD task can respond with a 'Yes', because *room* is an English words. But *room* could trigger a 'No', response too because it is also an existing Dutch word. As a consequence, in this task a response-based conflict arose due to interlingual nature of the selected homographs.

In contrast, in a Generalized Lexical Decision (GLD) no response conflict was generated as participants were required to press a 'Yes' button when a presented letter string is a word, irrespective of the language to which it belongs, and a 'No' button when the string is not a word in any of the languages involved. Bilingual brains showed greater activation in the ELD task than the GLD task for the contrast between interlingual homographs and English control words. The control group of English monolinguals presented a non conflict contrast as both tasks were necessarily ELD tasks. Analyzing the data Dijkstra & Van Heuven (ibid: 182) conclude that 'both languages of bilinguals are activated when they read the words from their second language. Importantly, bilinguals are not able to suppress the nontarget language to avoid interference'. Thus the brain activation during lexical production in a target language in high proficient bilinguals too triggers both languages and conflict between them is evidenced.

2.6.2 Language conflict and the pre frontal cortex

Conflict between languages activates the prefrontal cortex state Miller and Cohen (2001)[48] and Koechlin et al (2003)[49]. They concur that a main function associated with the prefrontal cortex is executive control to overcome word retrieval difficulties. Phonological retrieval (Gold and Buckner 2002)[50], grapheme-to-phoneme conversion and lexical search (Heim et al. 2005)[51] too lead to activation in the prefrontal cortex.

Thus when a bilingual is required to name a word, if language conflict arises the pre frontal cortex is activated and is used to overcome retrieval difficulties. More evidence for activity in the pre frontal cortex comes from Bunge et al (2002)[52] whose findings predict that the prefrontal cortex was recruited when there was a need to select between competing responses. They state that the prefrontal areas of the brain are involved in the selection among alternative response options. Furthermore it is this brain region which inhibits the activation of the non-target language representations. Abutalebi and Green (2007: 247)[53] state 'on the basis of brain data we suggest that inhibition is a key mechanism in language control and lexical selection'. They claim that the prefrontal circuits are mainly equipped with inhibitory neurons and they provide the ideal mechanism for inhibitory control.

Though it is not the only brain region activated during lexical access one reason for the restricted interest on brain activity in the pre fontal cortex is the language conflict solving ability and as inhibiting unwanted lexical items is one of its neural functions. Additionally literature states high/ low L2 proficiency dichotomy affects its rate of activation.

Summarizing the reviewed literature above the following can be stated:

1. In the high proficiency L2 speaker less pre frontal activity is indexed as,

a) There is less need for language control or L1 inhibition (Kroll et al., 2002)[54].

b) Word retrieval will be automatic and language specific **(**Hernandezet al., 2005)[55].

2. When needed to produce words in the weak L2 the prefrontal cortex of the low proficiency L2 speaker is highly activated as,

a) There is a need to overcome language competition which requires controlled, conscious processing (Francis, 1999[56]; Meuter & Allport, 1999[57])

b) Processing involves inhibiting highly activated unwanted L1 lexical items. As a result lexical retrieval is conscious, effortful, takes more time and is more prone to errors (Edmonds & Kiran**,** 2006[58]; Kroll & Stewart, 1994[59]; Kroll et al. 2002[60]; Segalowitz & Hulstijn, 2005[61]).

Thus neurological evidence for word naming proves that the difference in L2 proficiency clearly influences word processing and weak learner bilinguals undergo a strong L1 influence during L2 lexical naming tasks. Thus lexical retrieval in the weak L2 'is conscious, effortful, takes more time and is more prone to errors'. Extending this to the present study, 'more prone to errors' is of importance. This study recognizes rate of occurrence of deviations from SSLE pronunciation = 'proneness to errors' in OVSLE bilingual pronunciation.

III. METHODOLOGY

3.1 Research question

Is there a correlation between Proficiency in SLE and Rate of occurrence of selected deviations from SSLE pronunciation?

3.2 Participants

3.2.1 Participant population I: S/SLE bilingual undergraduates

Out of the total population of 1020 S/SLE bilingual undergraduates (2011/2012) from the Faculties of Humanities and Social Sciences of University of Kelaniya, a population of 200 (mean age 21 years) was selected through standard random sampling procedures as respondents to a questionnaire (Appendix A) and a pronunciation elicitation process. Table 1: Instrument I (§ see 3.4.2.1) was utilized for elicitations. Of the 200 participants 54 did not flout SSLE norms in the selected deviations from SSLE in Instrument I. Thus they were eliminated. From the 146 shortlisted participants who belonged to the S/OVSLE bilingual speech populations 100 were randomly selected as respondents to the questionnaire.

3.2.2 Participant population II: T/SLE bilinguals

100 respondents consisting of T/SLE bilingual Advanced Level students (mean age 17 years) from Sandilipay Hindu College, a rural, mixed school situated roughly eight kilometers from the Jaffna town were respondents to a questionnaire (Appendix A). They underwent the same pronunciation elicitation process utilizing Table 1: Instrument I (§ see 3.4.2.1). Of the 100 participants 15 did not flout SSLE norms in the selected deviations from SSLE in Instrument I. Thus 85 shortlisted participants who belonged to the T/OVSLE bilingual speech populations were respondents to the questionnaire.

3.3 Measuring proficiency

Norris and Ortega (2000) [62], in a comprehensive analysis of a multitude of L2 research studies, observed that the L2 language proficiency of learners can be determined through a variety of methods that elicit their automatized knowledge of the L2 system. All formal ESL testing evaluate this knowledge and provide a reference point for categorizing learners based on their proficiency levels of L2. For the experimental purposes of this study, the L2 proficiency of the learners was operationalized through their performance at a standard summative examination. The statistics for this variable for the undergraduate S/OVSLE population was obtained from a one year, two credit issuing compulsory course *English for Communication* from the University of Kelaniya. This course evaluates grammar, vocabulary, reading and writing through a written paper while speaking and listening skills are evaluated at the assignment level. A similar process of was followed for the T/OVSLE bilinguals where the final marks obtained for two most recent tests at school were collated as the formal measurement of proficiency.

3.4 Inquiry systems

3.4.1 Inquiry system I: Short questionnaire

This instrument (Appendix A) collected data on personal information such as age, sex and ethnicity from all S/OVSLE and T/OVSLE bilingual participants of this study.

3.4.2 Inquiry system II: Interviews for pronunciation measurement of respondents

According to Fraenkel and Wallen, (1996)[63] interviewing is an important way for a researcher to verify or refute the impressions he or she has gained through observation. They consider interviewing as the most important data collection technique a researcher possesses. Concurrence comes from Cheshire et al (2005)[64] who state 'phonological variables show up with high frequencies in sociolinguistic interviews, and can be easily elicited through word lists'.

3.4.2.1 Word List for pronunciation elicitation

This research instrument was compiled from lexicon suggested as representing pronunciation features of OVSLEes obtained from literature on SLE. The target phonological feature in each lexicon is relatively easy to perceive and define and could be specified binarily for their variety discrimination load. Furthermore the tokens were evaluated for word frequency for English through the Brown Corpus (Francis and Kucera, 1982)[65] and the selected instrument consists of high frequency words.

25 lexica from surveyed literature compiled the list for pronunciation elicitations. Recorded lemmas which give rise to pronunciation deviations from SSLE in bilinguals who use OVSLEes were obtained from sources and 5 for each target pronunciation area were randomly shortlisted.

Table 1: Instrument I - Lexical tokens for testing target deviations from SSLE in S/OVSLE and T/OVSLE bilinguals

#	Target deviation	Lexicon with target phoneme/phonotactic feature				
		1	2	3	4	5
1.	o / ɔ	bowl	ball	hole	yoghurt	boat
2.	f / p	paddy field	program	past	profit	airport
3.	s / ʃ	auction	push	sheet	pressure	cousin
4.	i+s	station	screen	style	smile	screw
5.	Syllable omission	environment	identity	exercise	temporary	government

3.5 Procedure

The data collectors for participant population I (S/SLE) were staff members of the English Language Teaching Unit (University of Kelaniya). They were graduates who had read English as a subject with post graduate qualifications in Linguistics. Participant populations II (T/SLE) from Sandilipay Hindu College, Jaffna was examined by a team of experienced teachers of English (mean average of teaching experience = 12 years) headed by Ms. Yamini Baskeran. In all data collecting procedures I instructed and supervised the personnel involved and was a parallel data collector. Each member of the data collecting team had exposure to Linguistics, could transcribe using IPA and was sensitive to pronunciation deviations from SSLE in their respective bilingual populations. Their word list had the target deviation in pronunciation highlighted (as in Table 1 above).

Each respondent was interviewed by a panel of two data collectors. On arrival at the examining locale the respondents handed over their completed questionnaires and read the 25 word list provided to them. They were required to pronounce each word with maximum clarity. The two data collectors recorded whether the target deviation from SSLE was evidenced in the pronunciation of each word. The perceptive accuracy was dependent on both data collectors perceiving evidence for the target deviation from SSLE in a participant. During shortlisting the respondents who did not deviate from SSLE pronunciation were eliminated from the analysis.

4.1 Research question: Analysis of correlation

Is there a correlation between Proficiency in SLE and Rate of occurrence of selected deviations from SSLE pronunciation?

Hypotheses:

If X is the Proficiency in SLE and Y the frequency of occurrence of selected deviations from SSLE pronunciation:

H_0– Proficiency in SLE (X) has **no correlation** to the frequency of occurrence of deviations from SSLE pronunciation (Y).

H_1 – Proficiency in SLE (X) is **negatively correlated** to the frequency of occurrence of deviations from SSLE pronunciation (Y).

H_2 – Proficiency in SLE (X) is **positively correlated** to the frequency of occurrence of deviations from SSLE pronunciation (Y).

IV. RESULTS AND ANALYSIS

4.1.1 Proficiency in English and Rate of occurrence of pronunciation deviations from SSLE in S/OVSLE, and T/ OVSLE bilinguals: Scatter plot graphics

4.1.1.1 S/OVSLE bilinguals

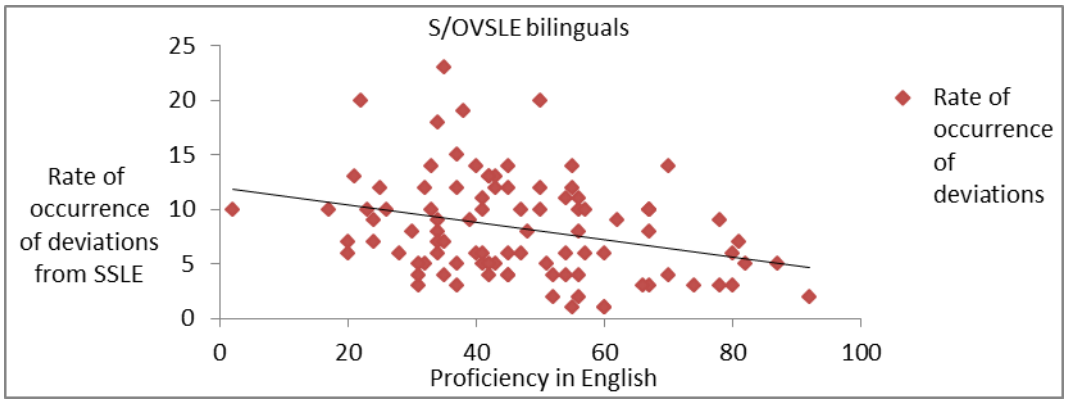

Figure 2: Scatter diagram illustrating correlation between Proficiency in English and Rate of pronunciation deviations from SSLE in S/OVSLE bilinguals

4.1.1.2 T/OVSLE bilinguals

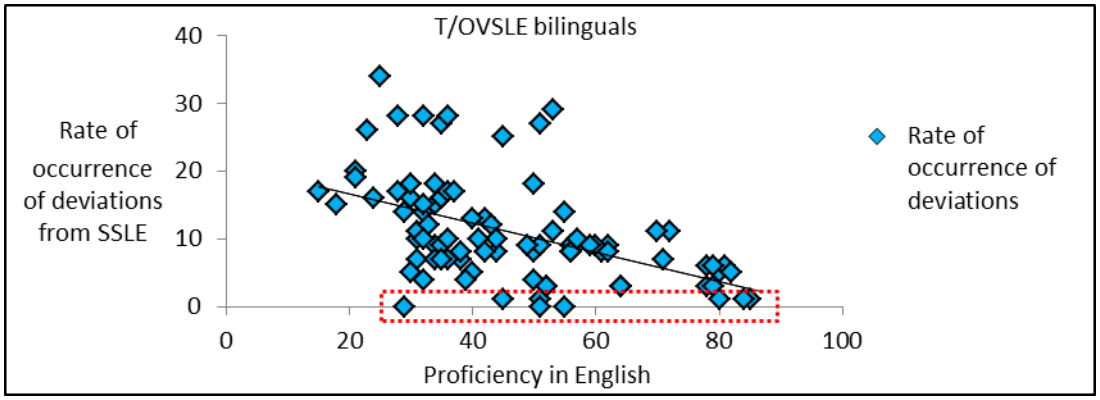

Figure 3: Scatter diagram illustrating correlation between Proficiency in English and Rate of pronunciation deviations from SSLE pronunciation in T/OVSLE bilinguals

D nts placed on the x-axis

The dispersion of the data points in the above scatter plots in Figures 2 and 3 illustrate that there is a negative correlation between the two variables in all three populations. Thus the independent variable Proficiency in English affects the dependent variable Rate of occurrence of deviations from SSLE pronunciation in the two populations and indicates a negative relationship.

But note the dispersion of the data points in the above scatter plots indicate that proficiency in English is not the only gauge for the rate of occurrence of deviations from SSLE in individual bilinguals in both populations above as many data points are placed far away from the linear trendline. Note the data points placed on the x-axis. The participants had 0 deviations from SSLE pronunciation but they had differing levels of Proficiency in English.

4.1.2 Analysis of correlation between Proficiency in English and Rate of occurrence of deviations

4.1.2.1 Descriptive statistics for S/OVSLE bilingual population

The Pearson correlation between Proficiency in English and rate of occurrence of deviations is - 0.305, i.e. the two variables of interest have a moderate positive correlation as Higgins (2005)[66] states that for values of *r* between -0.3 and -0.4.9, correlation is moderate.

Thus for the S/OVSLE bilingual population,

H_2 – Proficiency in English is **negatively correlated** to the estimated frequency of occurrence of deviations from SSLE pronunciation is **validated**.

Furthermore the correlations are statistically significant at the 5% level. Any p-values less than .05 indicate that the result is not due to chance. Thus the p-value of 0.003 evidences that there is an actual correlation between the variables.

The Pearson Correlation for this population is - 0.305. Thus R^2 = - 0.305 x - 0.305 = 0.09. So the variance explained is 0.09 x 100 = 9%. Thus the coefficient of - 0.305 shows a medium (Brown and Rodgers, 2002: 190[67] state medium is 9%) 9% variance explained. This also means that 91% of the variance is unexplained which indicates that influences other than Proficiency in English influence the rate of occurrence of deviations from SSLE in the S/OVSLE bilingual population.

4.1.2.2 Descriptive statistics for T/OVSLE bilingual population

The Pearson Correlation between Proficiency in English and rate of occurrence of deviations for this population is -0.497, i.e. the two variables of interest are moderately negatively correlated. Thus for the T/OVSLE bilingual population,

H_2 – Proficiency in English is **negatively correlated** to the estimated frequency of occurrence of deviations from SSLE pronunciation is **validated**.

Furthermore the correlations are statistically significant at the 5% level (i.e. it can be concluded that the correlation is not purely due to chance but due to actual correlation between the variables.) Any p-value less than .05 indicates that the result is not due to chance. Thus a p-value of 0.000 evidences an actual correlation between the variables.

The Pearson correlation is -0.497. Thus R^2 = -0.497 x -0.497 = 0.245. So the variance explained is 0.245 x 100 = 24.5%. Thus the coefficient of -0.313 shows a large (Brown and Rodgers, 2002: 190[68] state large is 25%) 24.5%. variance explained. This also means that 75.5% of the variance is unexplained which indicates that variables other than Proficiency in English influence on rate of occurrence of deviations from SSLE in the T/OVSLE bilingual population.

Table 2: Percentage of variance explained for the two populations of this study

Variable	% of variance explained	
	S/OVSLE	T/OVSLE
Proficiency in English	9.0	24.5

V. CONCLUSIONS

This paper examined the correlation between Proficiency in English and the Rate of occurrence of selected deviations from SSLE pronunciation. De Lacy (2007)[69] argues that markedness is part of our linguistic competence and the rate of occurrence of L1 features transferring to L2 is dependent on the competence of L2. Thus through deductive reasoning it could be stated that learner English users do more repairs to L2 lexical phonology and as a corollary deviate from norms of SSLE pronunciation. The findings of the Research question of this study validated the above tenet as it showed a significant negative correlation between Proficiency in English and the Rate of occurrence of selected deviations from SSLE pronunciation i. e. as Proficiency in L2 increases the Rate of occurrence of selected deviations from SSLE pronunciation decreases. Thus Proficiency in L2 has a strong influence on pronunciation deviations from a standard variety of English.

Summarizing the findings of the Research question though Proficiency in SLE influence the rate of occurrence of deviations from SSLE in a bilingual user of OVSLEes it cannot be stated that it is the only factor that causes the deviations. This is evidenced in the correlation analysis where the total percentage of variance explained for the two factors across the two populations of this study was S/OVSLE: 9.0% and T/OVSLE: 24.5%. Thus with high % of variability unaccounted for it is concluded that other exogenous factors too would have influenced the rate of occurrence of deviations from SSLE. Agreement comes from Rasinger (2008: 159)[70] who states that with high % of variability unaccounted for there is plenty of space for other factors to influence an independent variable. Literature identifies many other factors such as aptitude (phonemic coding ability), psychomotor skills, age, gender, age of L2 acquisition, the learner's attitude, motivation, language ego, and other sociocultural and sociopsychological variables clearly influence the degree of pronunciation variation. One contribution of this correlational investigation is that it informs pedagogy of the influence Proficiency in English on deviation from SSLE pronunciation which is the native target of Teaching English as a Second Language in Sri Lanka.

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APPENDIX A: SCHEMATIC EVALUATION OF BILINGUAL PROFILES

Name ……
Student #…….
Age …… Sex: Male/Female

1. What was your performance level in the following examinations? *Circle the grade obtained if applicable*.

Examination	Grade obtained				
O/L Sinhala	A	B	C	S	W
O/L Tamil	A	B	C	S	W
A/L Sinhala	A	B	C	S	W
O/L English Language	A	B	C	S	W
O/L English Literature	A	B	C	S	W
A/L General English	A	B	C	S	W

✓ ***The appropriate box in the following***

2. What was your method of learning English?

Instructed in school	
Natural acquisition at home	
Both	

3. If instructed # of years of English instruction in school/s:

Grade	1-13	1-11	3-11	3-13

4. Of the two forms given below which category are you a bilingual in?

Sinhala /Sri Lankan English	Tamil /Sri Lankan English

5. ***Now***

- *Please handover this form to the data collector*
- *Then you are required to read out loud a selection of English words.*
- *This is needed purely for experimental purposes.*
- *Start pronouncing the words given in a list to you at the signal to commence.*

Official use only

Data collector's assessment of SLE pronunciation in Sinhala/ SLE bilinguals

✓ *Indicates the correct pronunciation. An **X** mark denotes that the target deviation is present. Please insert any other deviations in the third column.*

#	Target deviation	Lexicon with target phoneme/phonotactic feature									
		1		2		3		4		5	
1.	o / ɔ	b**ow**l		b**a**ll		h**o**le		y**o**ghurt		b**o**at	
2.	f / p	**p**addy **f**ield		**p**rogram		**p**ast		**pro**fit		air**p**ort	
3.	s / ʃ	auc**ti**on		pu**sh**		**sh**eet		pre**ss**ure		cou**s**in	
4.	i+s	**st**ation		**s**creen		**st**yle		**sm**ile		**sc**rew	
5.	Syllable omission	envi**ron**ment		iden**ti**ty		ex**er**cise		tempo**ra**ry		gover**n**ment	

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