

# The Effects of L2 Proficiency on L3 Phonological Acquisition: A Preliminary Test of the L2 Proficiency Hypothesis

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## 1. Introduction

It is generally believed that learning a second language will aid in subsequent language learning (Ringbom 1987, Thomas 1988, McLaughlin and Nayak, Cenoz and Valencia 1994, Sanz 2000, Herdina and Jessner 2002, Melhorn 2007). However, it is still not clear as to what extent a learner must know that second language in order for it to have a facilitating affect on the acquisition of future language systems. The aim of this paper is to compare learners' proficiency in their second language (L2) to their target-like pronunciations in their third language (L3). It is hypothesized that higher proficiency in the L2 will increase the amount of target-like pronunciations in the L3 due to increased levels of metalinguistic competence.

This paper is structured as follows. The background section will begin with current research on bilinguals and metalinguistic competence within the TLA field, followed by a review of other studies which have directly compared L2 proficiency to L3 acquisition. Closing the background section will be a discussion of Major's 2001 Ontogeny and Phylogeny Model (OPM), which will be used in order to discuss how differences in L2 proficiency may lead to differences in the acquisition of a third language.

Following the background information is a brief discussion of the present study including the hypothesis, participants, methods and results. Finally, there is a detailed discussion of those results, and closing comments.

## 2. Background

### 2.1. *Bilinguals in TLA research*

Much of current TLA research investigates the role of bilinguals learning an L3. The claim is that bilinguals will perform better on L3 tasks compared to monolinguals performing L2 tasks. This claim has been supported by many studies over the last three decades, but perhaps the pioneer of this idea was Ringbom with his 1987 study in which he compared 577 Finnish monolinguals to 577 Finnish-Swedish bilinguals. Each group was learning English as an L2 or L3 respectively. After being given a Finnish-English translation task, Ringbom noted that the bilinguals had a significant advantage over the monolinguals in completing the translation, moreover, given that the participants L2 is more closely related to the L3 than is the L1, it is possible that the bilinguals were able to outperform the monolinguals due to the similarities between their language systems. However, Ringbom does not mention this to be a factor in the study.

In the following year, Thomas (1988) found similar results in her study comparing 16 English monolinguals to 16 English-Spanish bilinguals on their acquisition of the grammar and vocabulary of L2 or L3 French respectively. Furthermore, she divided her bilinguals into two groups; those who learned L2 Spanish naturally by means of living in a bilingual household, and those who learned it in a formal second language classroom.

Her results indicated that the bilinguals, regardless of how they learned their L2, scored significantly higher than the monolinguals on both the grammar and the vocabulary tasks. Additionally, Thomas noted that the bilinguals who had learned their L2 in a formal language classroom had a slight advantage over the bilinguals who had acquired the L2 naturally in the vocabulary task, and a significant advantage in the grammar task. Similar to Ringbom's study, both the

L2 and the L3 in Thomas' study are closely related, which may further facilitate the language learning process; however this was not commented on in the study.

Finally Sanz (2000) compared 77 Spanish monolingual high school juniors to 124 Spanish-Catalan bilingual high school juniors studying at a bilingual school on their acquisition of L2 or L3 English respectively. Almost 50% of the bilingual participants had acquired both languages through living in a bilingual household, and all of the bilingual participants noted on a pre-study questionnaire that they speak both languages on a daily basis. Sanz concluded that the bilinguals consistently scored higher on L3 proficiency tests compared to the monolinguals on their respective L2 proficiency tests.

## 2.2. *Metalinguistic knowledge*

Because bilinguals have been consistently outperforming their monolingual counterparts in language acquisition tasks, researchers proposed a new claim about language learning which states that the development of two or more language systems results in higher metalinguistic competence which facilitates the acquisition of additional languages (Thomas 1988, Cenoz and Valencia 1994, Schmidt 1995, Herdina and Jessner, 2002, Melhorn 2007).

Thomas (1988) was one of the first to openly support this claim in TLA after her previously mentioned study about the acquisition of grammar and vocabulary of L3 French by English monolinguals and English-Spanish bilinguals. She argued that the bilingual group was able to perform better in the L3 than the monolinguals in the L2 because "bilinguals learning a third language seem to have developed a sensitivity to language as a system, which helps them perform better on those activities usually associated with formal language learning than monolinguals learning a foreign language for the first time" (p. 240).

Melhorn (2007) gives an explanation as to why those who have already learned one foreign language have increased metalinguistic knowledge and why that knowledge aids in "shortening the time needed to learn the next languages(s) as well as the effort invested into language learning" (p. 1,746). He claims that the understanding of the language learning processes, the development of foreign language learning strategies and the acquisition of a new language system for comparison with further systems all increase one's metalinguistic awareness and support the learning of additional foreign languages.

Considering all of the previously mentioned studies of bilinguals in TLA, metalinguistic competence, and facilitated language learning, Herdina and Jessner (2002) proposed the Dynamic Model of Multilingualism (DMM) which states that metalinguistic awareness is a key factor contributing to the cognitive processes involved in foreign language learning. They continue to explain that this factor becomes increasingly more important in TLA than in SLA given that the increased language learning experience, which in turn increases one's metalinguistic competence, speeds up the language acquisition process.

Although the acquisition of a third phonological system remains the least explored area of TLA, Melhorn (2007) believes that increased metalinguistic knowledge (achieved through the aforementioned factors such as development of language learning strategies) also facilitates the acquisition of a third phonological system. He states, "Multilingual learners possess a larger repertoire of phonetic-phonological parameters, of language awareness and phonological knowledge as well as increased cognitive flexibility, which supports their acquisition of the phonetics of further foreign languages" (p. 1,745). He further explains that students who learned their L2 in a formal language setting will have acquired extra-linguistic factors which increase their metalinguistic knowledge of sound systems, thus facilitating and quickening their acquisition of a third or additional sound systems. These factors are (Melhorn, 2004 p. 1,746):

- Students already know that their native language differs with respect to the sound system and prosody from other languages.
- Students might know that in most languages there are certain rules for the correspondences between phonemes and graphemes.
- Students might be acquainted with the International Phonetic Alphabet (IPA),
- Students already know some phonological rules.

- Students are aware of typical phonetic features of their native language which lead to the perception of a foreign accent in the target language,
- Students have experience with the articulation of new sounds.

### 2.3. L2 proficiency in TLA studies

Although all of the previously mentioned studies indicate a facilitated acquisition process for bilinguals learning a third language as compared to monolinguals learning a second language, they also share one common flaw, which is that the term bilingualism or bilinguality is not clearly defined, nor are the participants' L2 proficiency stated, leaving open the question of how bilingual must one be in order to reap the benefits of increased metalinguistic awareness?

There are only three known studies which directly compare learners' L2 proficiency with L3 acquisition. In the first study, Salaberry (2005) compared L1 English, L2 Spanish learners of L3 Portuguese on their acquisition of the tense-aspect grammatical markings. The participants were divided into two groups based off of their relative knowledge of Spanish, determined by a biographical questionnaire in which the participants rated their L2 proficiency on a scale of one to ten. Those who self-rated their L2 proficiency as eight or higher were classified as having high L2 proficiency (a total of 56 participants) and those with a score of seven or lower were classified as having low L2 proficiency ( a total of 14 participants). Salaberry concluded that the participants with advanced knowledge of their L2 outperformed the participants with low L2 proficiency in the acquisition of past tense aspectual markers in the L3.

Similarly, Baiyinna (2009) assessed the role of L2 proficiency on learning the tense-aspect system for L1-Mongolian, L2-Chinese speakers learning their L3, English. She also noted that the learners with a higher L2 proficiency scored higher on all of the presented tasks, yet there were still other factors to consider such as amount of L2 input received and the activation of L2 during the study itself.

Finally, Simon, Escudero and Broersma (2010) examined the effects of varying degrees of L2 English and L3 Dutch proficiency on L1 Spanish learners' ability to acquire new L3 words. The degree of proficiency of the L2 and L3 was determined by a general listening comprehension test. The participants were taught Dutch pseudo-words, and were later tested on their recognition of the recently learned words. They concluded that advanced knowledge of L2 English, (over advanced knowledge of L3 Dutch) was the best predictor of the participants' accuracy of learning the new L3 words.

These three studies used different methods of measuring L2 proficiency, yet still came to the same conclusion: L3 acquisition becomes more facilitated with higher degrees of L2 proficiency. These findings are in accordance with the previous studies on bilinguals in TLA; as a learner's proficiency in an L2 increases, that learner becomes closer to bilingual which enhances their metalinguistic awareness and facilitates future language learning. Although there are still no known studies which directly compare learners' L2 proficiency to L3 phonological acquisition, this study hypothesizes that higher degrees of L2 proficiency will also aide in L3 phonological acquisition.

### 2.4. The Ontogeny and Phylogeny Model

In order to demonstrate graphically why learners with higher degrees of proficiency are expected to have more target-like productions in the L3, I would like to refer to Major's 2001 Ontogeny and Phylogeny model (OPM), which was proposed as a way of demonstrating the interrelationship between language universals, L1 interference, and L2 learning in the SLA field. The OPM states that in the early stages of SLA, learners' L2 interlanguage is mostly influenced by the L1. As the learners' acquire more of the L2 structures, the L1 interference will gradually decrease.

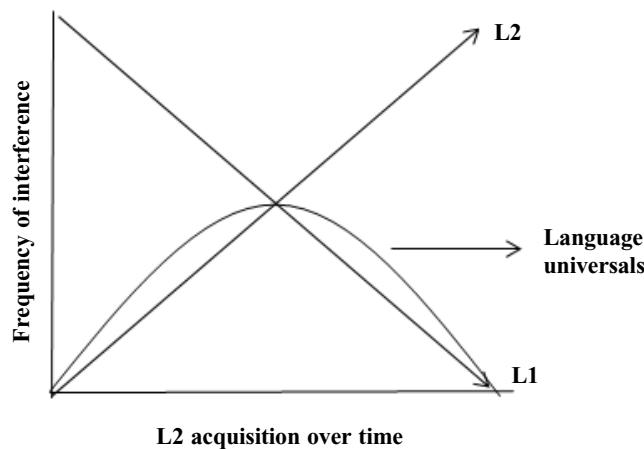
The second part of the OPM deals with language universals. Major proposes that during the language acquisition process, the presence of language universals will increase and then decrease. The definition given of language universals was kept broad in order that the OPM may be applied to a more general framework; however emergence of the unmarked can be used in order to demonstrate the effects of language universals of the language learning process. For instance, Spanish learners of

English may devoice final obstruents in their L2 production. In this example, the final devoicing must be attributed to language universals given that there is no devoicing feature in either the L1 or the L2, but rather it is a common phonological process found among world languages. Moreover, a Spanish learner of German producing final voiceless obstruents could be attributed to either language universals or L2 learning. In these cases, it is more difficult to pinpoint the exact cause of the devoicing feature

A further example to explain how language universals, L1 interference and L2 learning interact can be seen in the acquisition of English by L1-Japanese speakers. Japanese allows only vowels or nasal consonants in the word final position, whereas English allows a wide range of final consonants, including consonant clusters with up to four segments. During the early stages of English acquisition, the L1 influence of Japanese causes learners to epenthesize a vowel after the final consonant so as to not break any NL phonological rules. This same process can be seen when words with final consonants are borrowed into Japanese; since there are only final nasals, a vowel must be added which makes the final non-nasal consonant the onset of the syllable rather than the coda. This can be seen, for example, in the word *cup* which was borrowed as [kappɯ] (Kaneko and Iverson, 2009).

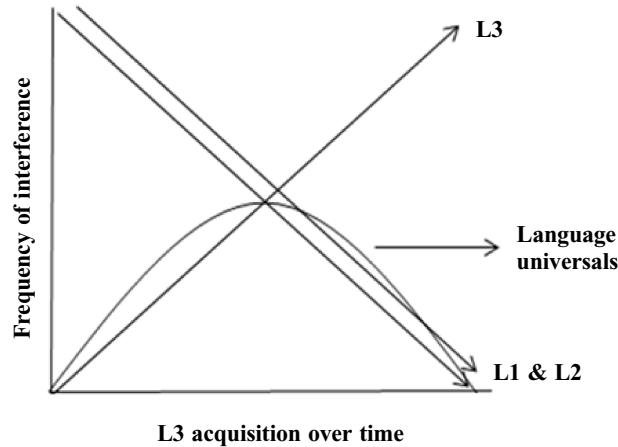
As the Japanese learners become more proficient in the L2 English, the L1 interference (epenthesis in this case) will begin to decrease as the role of language universals begins to increase. In this stage, the Japanese learners will begin to produce word final consonants not seen as part of their L1, but due to markedness constraints, which make up part of the language universals, these consonants will be devoiced as seen in the word *league* generally pronounced by Japanese learners as [lix] (Yasuta, 1996, cited in Major, 2001).

Finally, as the Japanese learners become more proficient in the L2, the role of language universals decreases, and they will begin to voice word final consonants, thus producing target-like pronunciations. The claims of the OPM are represented in figure 1.



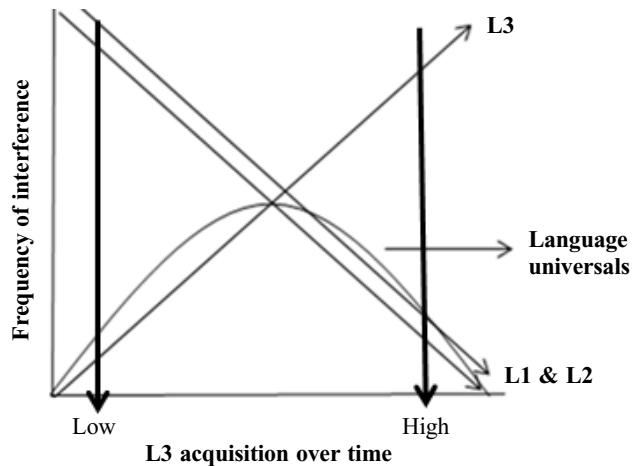
**Figure 1:** Major's 2001 Ontogeny and Phylogeny Model

Major continues by stating that the same principles of the OPM used to describe the interaction of the L1 and language universals in SLA can be applied to TLA, the only difference being that in the early stages of TLA, learners' L3 interlanguage will be influenced by both the L1 and the L2, and that this will gradually decrease as the L3 acquisition increases. The role of language universals remains the same for TLA as it was for SLA; it will gradually increase and then decrease during the acquisition process. Figure 2 displays the changes made on the OPM in order to incorporate a third language system.



**Figure 2:** Modified OPM for TLA

Using the modified OPM for TLA, we can predict what L3 learners' phonological interlanguage would look like based on their degree of acquisition in that L3. For the purpose of this study, I am proposing that participants with high L2 proficiency have high metalinguistic knowledge<sup>1</sup>. Similarly, those with low L2 proficiency have low metalinguistic knowledge. Given that high degrees of metalinguistic knowledge has been shown to shorten the time needed to acquire a third language, those with both high and low metalinguistic knowledge would be plotted at different points on the OPM. Figure 3 represents the approximate points of acquisition for these two different degrees of metalinguistic competence on the modified OPM for TLA.



**Figure 3:** Approximate points of acquisition for learners with low and high metalinguistic competence on the OPM

<sup>1</sup> Although metalinguistic competence was not directly measured in this study, this assumption is being made based off of previous research which states that bilinguals have more metalinguistic competence than do monolinguals. Those students who have achieved a higher proficiency in the L2 are closer to being bilingual than those with a very low L2 proficiency who have just started the language learning process, thus may have benefited more from increased metalinguistic knowledge.

The group with the lowest degree on metalinguistic competence would not have experienced a facilitated and quickened TLA process. Because of this, they would be plotted closest to the y-axis on the OPM, indicating that their L3 interlanguage still consists of high L1 and L2 interference.

Similarly, the group with higher metalinguistic competence will have acquired the L3 more quickly, plotting them further out on the OPM. This indicates that their L3 interlanguage is mostly target-like, with the possibility of minimal interference from the L1 and L2 or language universals. In the present study, high metalinguistic competence is being measured as having high L2 proficiency, thus it can also be concluded that those with high L2 proficiency will fall further out on the OPM, indicating a more target-like L3 interlanguage compared to learners with low L2 proficiency whose L3 interlanguage is characterized as having high L1 and L2 interference.

### 3. Study

#### 3.1. Hypothesis

In light of the studies presenting positive effects of bilingualism on the TLA process, as well as the aforementioned studies of the effects of L2 proficiency and L3 target-like production, the following hypothesis is being proposed:

**L2 Proficiency Hypothesis:** Learners with a high L2 proficiency will produce more target-like pronunciations in the early stages of TLA compared to learners with low L2 proficiency.

In order for this hypothesis to be supported, learners who have achieved a high degree of proficiency in their L2 must produce more target-like pronunciations than those with intermediate or low L2 proficiency. This hypothesis will be falsified if the participants with the lowest L2 proficiency produce more target-like pronunciations than those with a higher L2 proficiency. Furthermore, it will also be falsified if the learners of a lower proficiency group produce the same number of target-like pronunciations as the higher proficiency groups.

#### 3.2. Participants

There were a total of ten L1 English, L2 Spanish learners of Portuguese who participated in this study. There were four male participants and six female participants ranging in age from 19-31 (average 22).

All of the participants began to learn their L2 either in middle school or high school, and were now currently enrolled in a beginning level Portuguese course at the university. Three of the participants were enrolled in a second semester Portuguese course, and the remaining seven were enrolled in an advanced first year Portuguese course. Although the first group had been studying Portuguese for more time, the two courses used the same material and at the time of the study, were at approximately the same point in the learning process.

#### 3.3. Methods

The selected participants for this study first completed a questionnaire regarding their language experience with both the L2 and the L3 (See appendix 1). This questionnaire was used to ensure that all of the participants were approximately at the same point in their TLA process. For example, those who had Portuguese-speaking family members or who had spent a considerable amount of time in a Portuguese-speaking country were excluded from the study.

Next, the participants were given the cloze part of a DELE (Diplomas de Español como Lengua Extranjera) test (See appendix 2). This test has been used in other studies as a way of determining language proficiency, such as Montrul 2002 and 2004. Their scores were then converted into a percentage which reflects their degree of proficiency in the L2. The participants' scores ranged from 20% to 80%, with an average of 55%.

Based on the scores received on the cloze test, the participants were divided into three groups. Those who scored 80% were put into the high L2 proficiency group (2 participants), participants who scored 51-79% were put into the intermediate L2 proficiency group (4 participants) and those who

scored less than 50% were put into the low L2 proficiency group (4 participants). The percentages were chosen because all of the participants scores naturally fell into these three groups; there were no participants close to the border where they could have been considered part of a different proficiency group.

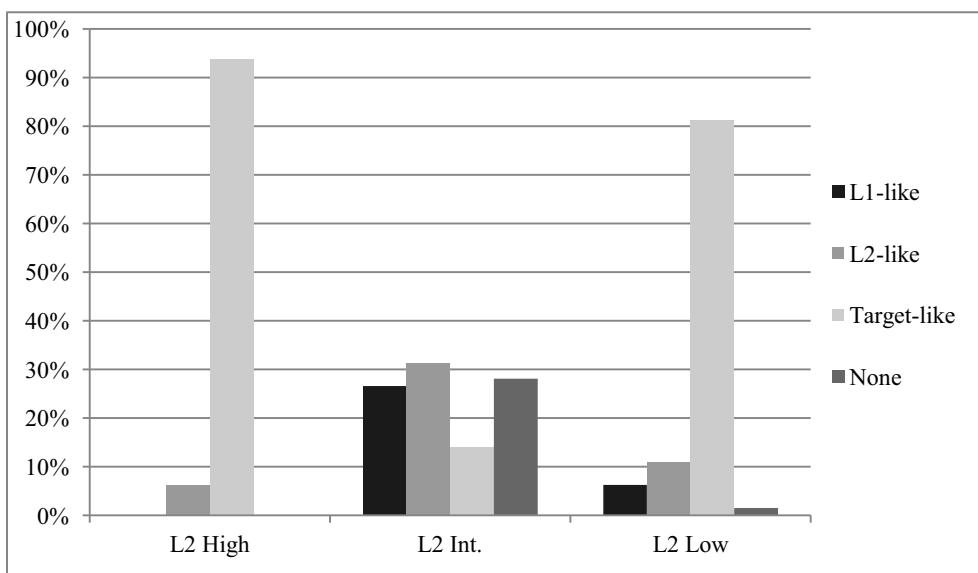
Finally, the participants were asked to read aloud a short story in Portuguese while being recorded using a Sony ICD-BX800 digital voice recorder (Appendix 3). The story took approximately 5 minutes to read and contained 16 targeted words.

The specific phonological feature examined in this study is the production of the Portuguese <r> in the word initial position and <rr> intervocally. This was chosen given that it has a different phonemic realization in all three languages. In English, an approximant would be produced such as in the words *red* [ɹɛd] and *carrot* [kæɹɒt]. In Spanish, these graphemes would be realized as a voiced alveolar trill such as *rico* (rich) [ri-ko] and *carro* (car) [ká-ro].

There are many different possibilities for the realization of this sound in the L3 given the wide range of different Portuguese dialects. In European Portuguese, the typical pronunciation is a voiced uvular trill, [ʀ] however a voiced uvular fricative [ʁ] is preferred in the Lisbon area. In the Brazilian dialects, the voiceless velar fricative, [x], voiceless glottal fricative, [h], or the voiceless uvular fricative, [χ], are the predominant pronunciations (Osborne, 2010, Cruz-Ferreira, 1995). Given the wide range of dialectal differences in Portuguese, any of the aforementioned realizations will be considered target like if produced by the participants.

## 4. Results

The pronunciations given for the sixteen target words from the reading passage were combined and categorized as being either: (1) L1-like, (2) L2-like, (3) target-like or (4) none of the above. The results can be seen in figure 4, with the different L2 proficiency level groups along the x-axis and the percentage of each pronunciation type along the y-axis.



**Figure 4:** Combined mean production per proficiency group.

The high L2 proficiency group produced target-like pronunciations 94% of the time, and an L2-like alveolar trill the remaining 6% of the time. There were no instances of L1 like pronunciations for this group.

The intermediate L2 proficiency group produced a wider variety of distinct pronunciations. The most common pronunciation was the L2-like alveolar trill, occurring 31% of the time. The next most common pronunciation was one classified as not L1, L2 or L3-like in its nature, which occurred 28%

of the time. In this group, this sound was realized as an alveolar tap. Although the alveolar tap does occur phonemically in all three languages, it is not represented graphemically or in the same phonological environment which was being tested in any of the languages, therefore it is classified as being none of the above.

Continuing with the pronunciations produced by the intermediate L2 proficiency group, the next most common pronunciation was that of an L1-like approximant occurring 27% of the time. Finally, the target-like pronunciation was the least common pronunciation for the intermediate L2 proficiency group, occurring only 14% of the time.

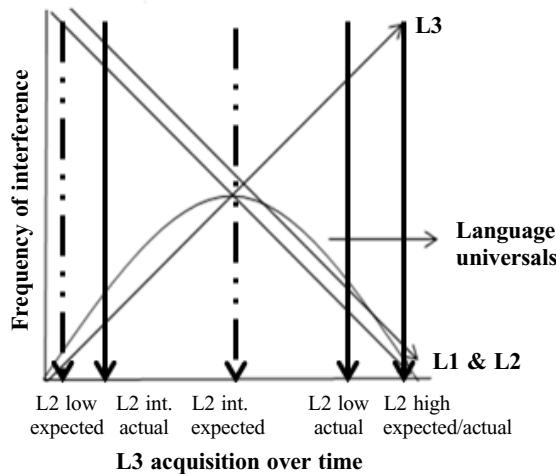
The low L2 proficiency group produced predominately target-like pronunciations, which occurred 81% of the time. The next most common pronunciation was that of the L2-like alveolar trill at 11%, followed by the L1-like approximant at 6%. There was one instance, totaling 2% of the token words, in which a participant used a sound that could not be attributed to learning or transfer. The pronunciation given was that of an /f/. Since /f/ is not a common substitution for r-sounds, it can be assumed that this was simply a mistake, possibly caused by a misreading of the word.

### 5. Discussion

The hypothesis being tested was that learners' L2 proficiency is linked to L3 target-like pronunciation in such a way that as L2 proficiency increases, so shall the frequency of target-like pronunciations. As previously stated, this hypothesis would be supported if, and only if, the high L2 proficiency group produced more target-like pronunciations than the intermediate L2 proficiency group, who in return, produced more target-like pronunciations than the low L2 proficiency group. Similarly, this hypothesis would be falsified if the intermediate L2 proficiency group produced more target-like pronunciations than the high L2 proficiency group, and/or if the low L2 proficiency group produced more target-like pronunciations than either the high L2 proficiency or intermediate L2 proficiency groups.

According to the criteria, it must be concluded that the current results do not support the hypothesis. Even though the high L2 proficiency group produced the most target-like pronunciations, as expected, the target-like pronunciations produced by the low L2 proficiency group exceeded those produced by the intermediate L2 proficiency group by 67%.

Figure 5 displays the approximate points of acquisition of each group plotted on the modified OPM for TLA in solid lines according to the results, along with the hypothesized points of acquisition of each group in dashed lines.



**Figure 5:** Expected and actual results per group plotted on the modified OPM for TLA.

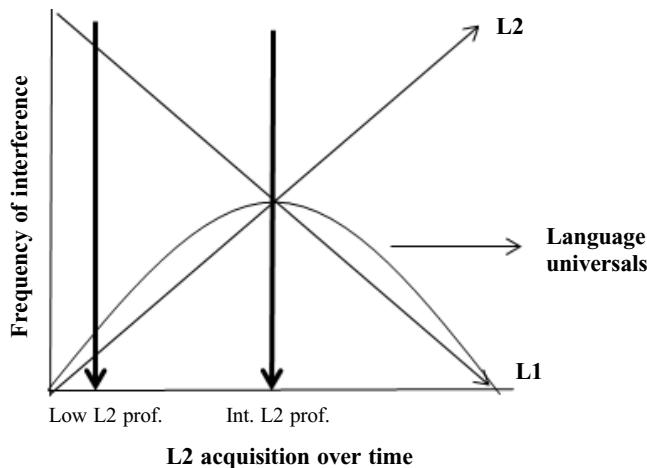
As can be seen in Figure 5, the high L2 proficiency group's expected and actual pronunciations are the same. It was hypothesized that they would produce the most target-like pronunciations given their higher metalinguistic competence achieved through high L2 proficiency, and they produced these sounds 94% of the time, with minimal L2 interference and no interference from the L1.

The low L2 proficiency group was expected to produce an L3 characterized by mostly L1 and L2 interference given their low metalinguistic knowledge, however, their actual pronunciations were much more target-like, with less interference than expected. I propose that this group was able to speed up their acquisition of this particular sound in the L3 because any amount of exposure to an L2, regardless of one's level of mastery in that language, is enough to increase metalinguistic knowledge and enhance the TLA process. All bilinguals from the presented studies were believed to have this increased metalinguistic knowledge as seen by their performance in the L3, and this group's ability to produce so many target-like pronunciations with such limited L2 proficiency is consistent with Macnamara's (1976) definition of bilinguals being anyone who has minimal competence in at least one of the four language skills.

However, if learners only need minimal competence in one of the four language skills in order to be considered bilingual and enhance the language learning process, then it would still be expected that the intermediate L2 proficiency group would have still produced more target-like pronunciations than what was observed given that they are more proficient than the low L2 group.

It is not that the intermediate L2 proficiency group has for some reason less metalinguistic competence than the low L2 proficiency group, but rather that something is blocking that competence from enhancing their production of the L3 sound. In this case, I propose that the learners in the intermediate proficiency group have a higher phonemic inventory of r-like sounds than the low L2 proficiency group, and these competing segments are slowing their TLA process.

I would like to refer once again to Major's (2001) OPM as a way of demonstrating why the intermediate group has a higher phonemic inventory of r-sounds than the low group. As previously mentioned, the OPM predicts that as SLA increases, L1 interference decreases, and language universals will increase and then decrease. However, both the intermediate and low proficiency groups were at different points in their L2 acquisition process and therefore their interlanguages would be influenced differently by the L1. Figure 6 represents the approximate L2 interlanguage for each of these two groups.



**Figure 6:** Approximant points of SLA for low and intermediate proficiency group

The low proficiency group's L2 interlanguage consists mostly of L1 interference. It is very plausible that this group has not yet even acquired the L2 rhotics, giving them a smaller phonemic inventory of r-sounds compared to the intermediate L2 proficiency group whose L2 interlanguage is influenced in approximately equally by the L1, language universals and L2 learning. Because of this, the low L2 proficiency group was able to acquire the L3 r-sounds more quickly because they have

fewer competing segments in their phonemic inventory compared to the intermediate L2 proficiency group.

Given these new interpretations of the results, it can be said that the results did not necessarily falsify the hypothesis; however certain unexpected yet independent variables masked what the hypothesis had predicted.

## 6. Limitations and future research

Future research within this field must take into account the independent variables, such as number of sounds in one's phonetic inventory, that were not anticipated in this study. Within the field of TLA, the L2 Proficiency Hypothesis holds true in such a way that learners with high L2 proficiency acquired the L3 sounds more quickly than learners with lower levels of L2 proficiency. Moreover, monolinguals learning their first foreign language will acquire the phonological system of their L2 more slowly than bilinguals learning the phonological system of their second foreign language, as mentioned by Ringbom (1987), Thomas (1988) and Sanz (2000) among others. I add to this discussion by arguing that any degree of bilingualism, or L2 proficiency, will enhance the language learning process, thus allowing for a more facilitated language learning process compared to monolinguals.

The idea that any exposure to an L2, regardless of learners' level of proficiency in that language, will enhance the TLA process so that they will produce more target-like pronunciations compared to their monolingual counterparts can be tested independently of the L2 Proficiency Hypothesis.

In order for it to be tested and supported, a control group consisting of monolinguals learning a foreign language for the first time must be added to the study. This claim will be supported if bilinguals, even with limited proficiency in the L2, produce more target-like pronunciations in the L3 compared to the monolinguals' target-like pronunciations in the L2. This claim will be falsified if the monolinguals produce more target-like pronunciations than the bilinguals with any degree of proficiency in the L2, or if both groups produce the same amount of target-like pronunciations.

The second factor which arose during the analysis of the results was the high phonemic inventories possessed by the intermediate proficiency group. Just as with the discussion of the monolinguals versus the bilinguals, this also does not affect the L2 Proficiency Hypothesis given that it is not the learners' level of proficiency in the L2 slowing their L3 phonological acquisition, but rather the nature of the target sounds chosen for this study. The L1, L2 and L3 all had a variety of different possible realizations of rhotics, increasing the intermediate learners' phonemic inventories. However, if the L1 and the L2 had the same realization for the sound being tested, the hypothesis would be expected to hold up, yielding results in which the high L2 proficiency group produces the most target-like pronunciations, followed by the intermediate L2 proficiency group and finally the low L2 proficiency group and the monolinguals.

This implication can also be tested independently of the hypothesis. In order to do so, two different sounds must be examined in the L3 production. Firstly, there should be a case in which the L1 and the L2 share a single sound, which is then different in the L3. In this case, there are no extra competing segments, and learners with intermediate L2 proficiency should outperform learners with low L2 proficiency due to their higher metalinguistic knowledge.

Also, similar to the present study, a sound which has at least one unique realization in each of the three languages should be tested. In this case, learners with intermediate L2 proficiency will have a higher phonemic inventory of the sounds in questions compared to learners with low L2 proficiency, and would thus be expected to produce less target-like pronunciations.

This claim will be falsified if learners with intermediate L2 proficiency consistently produce less target-like pronunciations in the L3 compared to the low L2 proficiency group regardless of the number of sounds in their phonemic inventory, or if they produce more target-like pronunciations than the low L2 proficiency group when there are many different competing segments.

## 7. Conclusion

This paper is a preliminary study to show an interrelationship between learners' L2 proficiency and the degree of target-like pronunciation in the early stages of TLA. All three groups produced varying amounts of target-like pronunciations.

The highest L2 proficiency group produced by far the most target-like pronunciations; this can be attributed to the previously mentioned notion of metalinguistic competence. The higher the proficiency in the L2, the more metalinguistic competence learners possess, thus facilitating the L3 learning process.

However, the lowest L2 proficiency group unexpectedly produced a high percentage of target-like pronunciations (81%) as well, whereas the intermediate L2 proficiency group produced the fewest amount target-like pronunciations (14%)

These results pose an intriguing question for current TLA researchers about how learners' L2 interlanguage affects the acquisition process of a third phonological system. In light of the present results, I propose that there are more variables which must be taken into consideration when examining how L2 proficiency affects L3 target-like pronunciations.

For instance, I argue that even a limited exposure to a foreign language is enough to boost metalinguistic knowledge, which in turn allows learners with low L2 proficiency to acquire the phonological system more quickly than would a monolingual learning a foreign phonological system for the first time. Because of this, the low L2-proficiency group was able to produce a high number of target-like pronunciations in the early stages of TLA.

The other variable deals with the size of the languages' phonemic inventories. If the three linguistic systems have different realizations of the same phoneme, the intermediate L2 proficiency group will produce fewer target-like pronunciations in the L3 given that they have more competing segments in their phonemic inventory compared to the low L2 proficiency group, who possibly would have not yet acquired the L2-sounds.

Further research is still needed in order to support this claim as this study's sample size and sounds tested were too limited to allow for generalizations; however the results presented here can at least function as a starting point for looking into the interrelationship between L2 proficiency and L3 phonological acquisition.

## Appendices

### *Appendix 1: Questionnaire*

Name: \_\_\_\_\_

1. Years of formal Spanish instruction: \_\_\_\_\_

2. Time since last enrolled in a Spanish class: \_\_\_\_\_

3. Time spent in Spanish speaking countries (length of stay and country): \_\_\_\_\_

4. Time spent speaking Spanish outside of class time? \_\_\_\_\_

5. On a scale of 1 to 10 (10 being highest) how would you rate your Spanish proficiency? \_\_\_\_\_

6. Years of formal Portuguese instruction: \_\_\_\_\_

7. Time spent in Portuguese speaking countries (length of stay and country): \_\_\_\_\_

8. Time spent speaking Portuguese outside of class time? \_\_\_\_\_

9. On a scale of 1 to 10 (10 being highest) how would you rate your Portuguese proficiency? \_\_\_\_\_

### *Appendix 2: Cloze test*

En los últimos años ha crecido en España un interés por la naturaleza que no es extraño que la jardinería se (1. **hubiera convertido** / **haya convertido** / **ha convertido**) en una de sus aficiones favoritas. Aunque ver la televisión siga (2. **ser** / **sido** / **siendo**) el pasatiempo (pasivo) preferido, es probable que la jardinería (3. **ha ocupado** / **ocupe** / **ocupa**) el primer lugar en la lista de las aficiones "activas".

(4. **Por / Desde / Hace**) unos días, una empresa dio a conocer los resultados de un estudio relacionado (5. **con / en / para**) el tema; se dice que el 76% de los españoles practican la jardinería, a la que (6. **dirigen / realizan / dedican**) una media de seis horas al mes. (7. **Parece / Merece / Puede**) ser que la jardinería y el bricolaje son las dos actividades que dominan el ocio en España: (8. **Llevan / Están / Son**) practicadas por dos tercios de la población. La principal diferencia es que (9. **mientras que / a medida que / desde que**) las motivaciones para el bricolaje están condicionadas por el ahorro, el 92% de (10. **cuales / que / quienes**) practican la jardinería lo hacen exclusivamente por placer.

Aunque parezca paradójico, la afición por la jardinería ha florecido, en (11. **esta / cierta / mucha**) medida, gracias al auge del desarrollo urbanístico; con las nuevas estructuras urbanísticas, (12. **es / hay / está**) más gente con acceso a un espacio ajardinado privado, (13. **la / el / lo**) que ha provocado una mayor demanda de productos de jardinería.

El (14. **ovejo / reto / final**) actual consiste en convertir la jardinería en una actividad sostenible, y adaptarla (15. **a / con / en**) los nuevos tiempos, partiendo siempre del clima en (16. **lo que / la que / el que**) se va a desarrollar. Los expertos afirman que es necesario crear un jardín sostenible (17. **desde / de / para**) la primera semilla. Además, se están introduciendo novedades como el cultivo en azoteas o, (18. **incluso / incluyendo / incluido**) en paramentos verticales, que prometen una mejora de la calidad ambiental de las ciudades. Esto último puede que (19. **ayuda / ayudará / ayude**) a compensar un dato que ofrece un estudio encargado por la Asociación Española de Centros de Jardinería: (20. **De ahí que / Salvo si / Por mucho que**) florezcan las viviendas, menos de la mitad de los practicantes de la jardinería poseen jardín propio, y un tercio practica su afición favorita en sus balcones o terrazas.

In the last few years, an interest in nature has grown in Spain, that it is not strange that gardening has become one of their favorite hobbies. Even though watching tv continues to be the preferred (passive) pastime, it's probable that gardening occupies the first place in the list of "active" pastimes.

A few days ago, a company publicized the results of a study related to this topic. It is said that 76% of Spaniards practice gardening, to which they dedicate an average six hours a month. It may be that gardening and DIY projects are the two activities that dominate the leisure entertainment in Spain. They are practiced by a third of the population. The principle difference is that while the motivation for DIY projects is conditioned by saving, 92% of those who practice gardening do so exclusively for pleasure.

Even though it appears to be a paradox, the gardening hobby has flourished, in certain measures, thanks to the huge boom of urban development; with the new urban structures, more people have access to a private gardening space, which has caused a huge demand for gardening products.

The current challenge consists in converting the gardening into a sustainable activity, and adapt it to the new times, starting always with the weather in which it will be developed. The experts agree that it is necessary to create a sustainable garden from the first seed. Furthermore, they are introducing novelties like the cultivation in roofs, or including in vertical parameters, which promise a better environmental quality for the cities. It can be the latter will help to compensate for that data that the study carried out by the Spanish Association of Centers of Gardening offer. For as much as the homes flourish, less than half of the gardening participates own their own garden and a third practice this favorite hobby in balconies or terraces.

### *Appendix 3: L3 reading passage: A Bela Adormecida*

Naquele grande reino, ao nascer um novo dia, nasceu uma princesa. Para o baptizado, foram convidadas três fadas madrinhas: Flora, Fauna e Primavera.

A meio dos festejos, Flora concedeu à princesa o dom da beleza e Fauna, o da música. E quando a fada Primavera se acercava, foi ultrapassada pela bruxa maléfica, que gritou:

-Quando fizeres dezasseis anos, vais picar-te no fuso de uma roca e morrerás!

Os reis suplicaram a Primavera que rompesse o feitiço.

-Não tenho poderes para isso, apenas posso torná-lo mais suave, respondeu a fada. E aproximando-se da princesa disse-lhe:

-Não morrerás...adormecerás profundamente, até que um beijo de amor te desperte!

Os anos passaram e Aurora cresceu e transformou-se numa bonita jovem, vivendo no bosque. Ao completar dezasseis anos, estas levaram-na para o castelo.

Ficou deslumbrada! Percorreu todas as alas e, numa delas, encontrou uma velha que estava a fiar numa roca, e lhe pediu ajuda. Aurora não foi capaz de dizer que não. Mas mal tocou na roca, picou-se, e caiu no chão profundamente adormecida.

Quando as três fadas, que já haviam regressado ao bosque, souberam do sucedido, voltaram ao castelo. Todos adormeceram nos lugares onde estavam, o rei, os músicos, os criados, até o bobo da corte! Depois de cem anos, um dia, andando à caça, um belo príncipe viu o castelo. Intrigado por não avistar ninguém, resolver entrar na torre mais alta e encontrou Aurora. O príncipe, maravilhado com tanta beleza, beijou-a com todo o amor.

O feitiço desfez-se! Aurora acordou. E acordou o rei. E a rainha também. E a alegria voltou ao castelo, e fizeram-se grandes festejos, com música e danças por todo o lado. O príncipe pediu Aurora em casamento, e foram muito felizes para sempre.

Targeted words:

reino, roca, morrerás, reis, rompesse, respondeu, morrerás, percorreu, roca, roca, regressado, rei, resolver, torre, rei, rainha.

In that great kingdom, on the birth of a new day, a princess was born. For her baptism, three godmothers were invited: Flora, Fauna and Spring. In the middle of the festivities, Flora gave the princess the gift of beauty and Fauna, music. And when the fairy spring was approaching, she was overtaken by the evil witch, who shouted:

-When you turn sixteen you will prick yourself on a spindle and die.

-The king and queen pleaded that Spring broke the spell.

-I don't have the power to do that, I can only make it softer, replied the fairy. And approaching the princess said to her:

-You won't die ... you will sleep deeply, until a kiss of love awakens you!

-The years passed and Aurora grew up and became a beautiful young woman, living in the woods.

Upon completion of sixteen years, they took her to the castle.

-She was dazzled! She traveled all the wards, and in one of them, found an old woman who was spinning a wheel, and asked her for help. Aurora was not able to say no. But hardly touched the spindle, it pricked her, and she fell fast asleep on the floor.

-When the three fairies, who had just returned from the woods, found out what happened, they returned to the castle. Everyone was sleeping in the places where they were, the king, the musicians, the servants, even the court jester! After one hundred years, one day while out hunting, the prince saw a beautiful castle. Intrigued by not seeing anyone, he entered into the highest tower and found Aurora. The prince, astonished with such beauty, kissed her with all of his love.

-The spell broke! Aurora woke up. And the king woke up. And the queen too. And the joy returned to the castle, where there were great festivities, with music and dancing everywhere. The prince asked Aurora to marry him, and lived happily ever after.

Targeted words:

kingdom, rock, die, kings, break, replied, die, come, rock, rock, returning, king, resolve, tower, king, queen.

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