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Second Language Learning: Lexical Processing and Grammatical

Development of University Classroom Learners of Spanish

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### **Abstract**

The purpose of this research was to examine vocabulary processing and grammatical proficiency of university second language learners of Spanish. The participants included both intermediate and advanced learners and native speakers. Experiment 1 studied lexical processing through a translation task. Learners were faster at translating from their second language (L2) to their first language (L1) than from L1 to L2. Contrary to predictions, learners translated organized word lists faster and than unorganized word lists. Experiment 2 explored 6 grammatical structures in a grammatical judgement task. Intermediate learners differed from natives on all structures except one. Advanced learners performed better than the intermediate learners, but still differed from natives on all structures but two. In both experiments, proficiency increased as language exposure increased.

## Second Language Learning: Grammatical Development and Lexical Processing of University Classroom Learners of Spanish

The ability to learn an additional language is a phenomenon that interests many researchers. Bilingualism involves acquiring competence in a language other than the native language (Ellis, 1994). This includes fluency in the second language as well as frequent use of the language. Bilinguals possess unique skills that allow them to produce, perceive, and memorize an additional language (Grosjean, 1982). With increased exposure to the language, proficiency generally increases.

Second language learners often process their second language in various ways, including using existing knowledge of their native language to generate an effective learning strategy. As learners process their second language, they go through distinct stages of development, creating developmental patterns (Ellis, 1994). For example, second language learners begin with a silent period and gradually master syntax.

Second language learning does not always occur in multilingual settings. A common setting for second language learning is the classroom. The classroom is a setting where second language is taught and learned as a subject (Ellis, 1994). Generally, learners have little exposure to the language outside of the classroom. The classroom setting greatly influences the degree of proficiency a learner can reach.

Two studies examining different aspects of university classroom second language learners of Spanish were conducted. The first experiment investigated the processing and storage methods used when learning vocabulary. The second experiment investigated the relationship between different levels of classroom instruction and grammatical competence.

### **Experiment 1**

The manner in which second language learners store their languages is a process that is commonly researched. Potter and Faulconer (as cited in Kroll, J. F. and Sholl, A., 1992), developed two memory models in order to explain the memory systems of language learners. The first model, the word association model, states that second language (L2) words are associated to first language (L1) words. The L1 words are directly linked to concepts. The only way L2 words can access concepts is through L1 mediation. The second model, the concept mediation model, states that L2 words can directly access concepts as well as words.

Kroll and Stewart (as cited in Kroll, J. F. and Sholl, A., 1992) developed a revised model of bilingual memory which combines both the word association model and the concept mediation model. It claims that lexical links are stronger from L2 to L1 than from L1 to L2. This predicts that translation is faster from L2 to L1 than that from L1 to L2. It also states that conceptual links for L1 are stronger than the conceptual links for L2. This predicts that learners are more likely to use a conceptual route from L1 to L2, accessing concepts through L1 mediation.

Kroll and Stewart tested this model in an experiment using a group of fluent Dutch-English bilinguals. The participants had to translate semantically categorized and randomly mixed lists of words from Dutch (L1) to English (L2) and from English to Dutch. Reaction times of the translations were measured. Their results indicated that translating from L1 to L2 was longer than L2 to L1. When comparing the mean translation latencies, from L1 to L2, the mean translation latencies of the categorized lists were twice as large as those of the randomized lists. From L2 to L1, the mean translation

latencies of the randomized lists were larger in general than those of the categorized lists. Therefore, semantic organization had an effect when translating from L1 to L2, meaning that L1 required conceptual processing. Category structure did not affect translation from L2 to L1, meaning that L2 to L1 required lexical processing.

This experiment attempted to support the findings of Kroll and Stewart (as cited in Kroll, J. F. and Sholl, A., 1992). Instead of Dutch-English bilinguals, late classroom learners of Spanish were tested. The participants were divided into groups according to their proficiency levels.

## **Method**

### Participants

The participants for this experiment consisted of 32 subjects: 16 students on the 2000 level, 8 students on the 3000-4000 level, and 8 native speakers. The native speakers consisted of speakers born and raised in Spanish-speaking countries as well as Spanish/English bilinguals born in the United States. Some countries represented included Puerto Rico, Honduras, Venezuela, and Cuba.

### Stimuli

The stimuli for this experiment consisted of 4 lists of ten elementary Spanish words or their English equivalents, as shown in Appendix A. Two of the lists consisted of categorized words concerning clothing and parts of the body. The remaining two lists consisted of randomized words; these were various words. The order in which the lists were performed was counterbalanced using a Latin Square Design. A computer program using Super Lab software was used in order to conduct the experiment.

### Procedure

All of the participants received four lists of words on the computer. One organized list and one randomized list were in English, while the other lists were in Spanish. A word was flashed across the screen and the participant had to translate the word into the other language into a microphone. There was a 5-second pause between each word. The computer recorded the reaction times.

In addition, participants completed a demographic questionnaire concerning their backgrounds and their Spanish education (see Appendix B).

## Results

### Data Analysis

A 3 (level of instruction: 2000, 3000-4000, Native) x 2 (translation direction: L1 to L2, L2 to L1) x 2 (list type: randomized, categorized) mixed ANOVA was used. The between subjects factor was the level of instruction. The within subjects factors were the translation directions and the list types. An alpha level of .05 was used for all statistical tests. For this ANOVA, the reaction times of 5000 ms and the reaction times less than 200 ms of a given subject were not included. Originally, the study consisted of 49 participants. Many participants did not translate the minimum four words per list. As a result, 17 participants were not included in the analysis.

When comparing both non-native and native groups, the analysis showed that there was a significant difference between the levels of proficiency with  $F(2, 29) = 16.20$  at  $p < 0.0001$ ; the means of the 2000 (intermediate), 3-4000 (advanced) and native levels were 1804 ms, 1256 ms, and 1242 ms respectively. A tukey post-hoc test showed that there was a significant difference between the intermediate level and both the advanced and native levels; there was no significant difference between the advanced level and the

native level. There was a significant difference in language type with  $F(1, 29) = 9.06$ ,  $p < 0.01$ . The participants were faster when translating from Spanish to English ( $M = 1395$  ms) than from English to Spanish ( $M = 1658$  ms). Also, there was an interaction between language and level,  $F(2, 29) = 5.51$ ,  $p < 0.01$ . (See Figure 1). When translating from English to Spanish, reaction times of the intermediate level ( $M = 2031$  ms) were significantly greater than that of the advanced level ( $M = 1348$  ms) and the native level ( $M = 1221$  ms); there was no significant difference between the advanced level and the native level. When translating from Spanish to English, the reaction times of the intermediate level ( $M = 1577$  ms) were significantly greater than those of the advanced level ( $M = 1164$ ). There was no significant difference between the native level ( $M = 1263$ ) and the intermediate level or the advanced level. For both translation directions, the intermediate group clearly translated at a slower rate than the advanced and native groups. Indeed, it was easier for all non-natives to translate from L2 to L1 than from L1 to L2. The natives also followed this trend. Natives were faster at translating from L2 (English) to L1 (Spanish) than from Spanish to English. (See Figure 1). In addition, there was a significant difference between the types of organization,  $F(1, 29) = 4.51$  at  $p < 0.05$ . The reaction times of the organized lists ( $M = 1464$  ms) were significantly faster than those of the unorganized lists ( $M = 1589$  ms). There were no significant interactions between organization type and level, language and organization, or language, organization, and level.

#### Words Correctly Translated

The same analysis was used for the number of words correctly translated. A significant difference was found in language type with  $F(1, 29) = 8.40$ ,  $p < 0.01$ . When



translating from English to Spanish, 69 % of the words were correctly translated. When translating from Spanish to English, 76% of the words were correctly translated. A significant difference was found between instruction levels with  $F(2, 29) = 21.60$ ,  $p < 0.01$ . The percent correct for the intermediate, advanced, and native levels were 62%, 84%, and 83% respectively. A tukey post-hoc test found a significant difference in the number of correct words recalled between the intermediate and both the advanced and native levels; there was no significant difference between the advanced and native levels. In addition, there was a significant difference between the organization types,  $F(1, 29) = 9.20$ ,  $p < 0.01$ . The percent correct of the organized lists (76%) were significantly greater than those of the unorganized lists (69%). There were no significant interactions between language and level, organization and level, language and organization, or language, organization, and level.

### Discussion

As in Kroll and Stewart (as cited in Kroll, J. F. and Sholl, A., 1992), translating from L1 to L2 was longer than L2 to L1. The advanced level translated faster than the intermediate level and at the same rate as that of the natives. As proficiency increased, the reaction times of all lists from L2 to L1 and from L1 to L2 became faster.

In addition, Kroll and Stewart (as cited in Kroll, J. F. and Sholl, A., 1992) found that randomized words are translated faster when translating from L1 to L2, while categorized words are translated faster when translating from L2 to L1. This study, however, found that the subjects were faster at translating the categorized lists than the uncategorized lists. There was no significant interaction between language and organization. Contrary to predictions, when translating from L1 to L2, the intermediate

level and the advanced level, collectively, were faster at the organized lists ( $\underline{M}$  = 1712 ms) than the unorganized lists ( $\underline{M}$  = 1895 ms). Individually, the intermediate level was clearly faster at translating the organized lists ( $\underline{M}$ =1902 ms) than the unorganized lists ( $\underline{M}$ =2161 ms) from L1 to L2. The performance of the advanced level, however, approached the trend found by Kroll and Stewart (1992). The advanced level translated the organized lists ( $\underline{M}$ =1332) at the same rate as the unorganized lists ( $\underline{M}$ =1363). Also, the native speakers differed from the findings of Kroll and Stewart (1992). When translating from Spanish (L1) to English (L2), the natives were faster on the organized lists ( $\underline{M}$ =1214) than on the unorganized lists ( $\underline{M}$ =1311 ms). A similar trend was found when translating from English (L2) to Spanish (L1). The natives were faster on the organized lists ( $\underline{M}$ =1192 ms) than on the unorganized lists ( $\underline{M}$ =1250ms).

The findings of this study do not parallel those of Kroll and Stewart (as cited in Kroll, J. F. and Sholl, A., 1992) for many reasons. One possible reason is the choice of vocabulary words. More words were translated from the categorized lists than the uncategorized lists. It is possible that the words used in the organized lists were easier than the words used in the unorganized lists. In addition, the advanced subjects used by Kroll and Stewart were highly fluent Dutch-English bilinguals. The advanced students used in this experiment may not have yet reached the high proficiency level of that of the learners in the Kroll and Stewart study. This would explain why the participants were faster at the organized lists for both translation directions. The fluency of the native participants is also questionable. The native speakers were not translating at 100% accuracy as expected. This is why translation was fast in both directions. Another reason is that of dialectal differences. Many speakers produced colloquial terms for many of the

words instead of the standard Spanish terms. For example, a Cuban participant said *truza* for bathing suit instead of *traje de baño*, the standard word.

## **Experiment 2**

Although proficiency in second language (L2) learners increases with exposure, the level of proficiency a L2 learner can achieve is limited. It is hypothesized that the ability to become fluent in a L2 peaks during a critical period and then gradually declines. Lenneberg (as cited in Johnson, J. S. and Newport, E. L., 1989) states in the critical period hypothesis that a language can only be fully developed if it is acquired before the onset of puberty. The critical period hypothesis does not directly apply to second language acquisition. The maturational state hypothesis, an extension of the critical period hypothesis, however, addresses second language acquisition. It states that humans have the ability to acquire first and second languages early in life. As maturation occurs, this ability gradually declines or disappears.

Johnson and Newport tested the maturational state hypothesis in an experiment using native Chinese and Korean speakers. The study consisted of participants that arrived in the United States between the ages of 3 and 39 and had resided here between 3 to 10 years. They all had at least 5 years of exposure to English. The participants were given a grammatical judgement task in which they judged the grammaticality of a set of sentences that were read in English. L2 learners that arrived in the United States before the age of 7 performed similarly to native speakers on the grammatical judgement task. Performance of older learners declined with age. However, the later arrivals showed a lot of variability in performance. These results demonstrate that the critical period extends to second language acquisition as well.

Mastery varied on the different grammatical structures that were tested, such as verb morphology, determiners, subcategorization, auxiliaries, yes/no questions, wh-questions, and word order. Johnson and Newport discovered that child and adult learners have little difficulty with word order and the present progressive tense. Adult L2 learners, however, have considerable difficulty with verb morphology and determiners.

The purpose of the following experiment was to expand upon the findings of the Johnson and Newport (1989) study. The experiment differed from the previous study in that the participants were late classroom learners of Spanish. Therefore, the age of acquisition was beyond the critical period. Variability in mastery was expected; this is based upon the amount of courses each learner has completed. The participants were divided into groups according to their levels of proficiency: 2000, 3000-4000, and native. As in Johnson and Newport, this experiment used a grammatical judgement task. However, instead of English structures, different Spanish structures were tested. Particular structures were chosen where difficulties were expected. Mastery was compared across proficiency level and grammatical structure type.

## **Method**

### Participants

The subjects of this experiment consisted of 35 college students: 15 intermediate (2000 level), 10 advanced (3-4000 level) and 10 natives. The participants were a combination of native English speakers and native Spanish speakers. The native English speakers were divided into groups according to the number of semesters of Spanish courses completed. The native Spanish speakers served as the control group, as a means of comparison.

### Stimuli

The stimuli for the experiment was 100 sentences, 50 correct and 50 incorrect. Each demonstrated the usage of one of six Spanish grammatical structures: gender, *por/para*, *ser/estar*, preterite/imperfect, subjunctive, and irregular verbs. These structures were used because they often cause great difficulty for second language learners of Spanish. Examples of each structure are featured in table 1.

The first grammatical structure tested was gender. This is a concept that is foreign to the English language. In the Spanish language, nouns are classified as either masculine or feminine and are introduced by the direct articles *el* or *la* respectively. Masculine nouns generally end in *-o* while feminine nouns generally in *-a*, *-dad*, or *-ción*. The following is an example of the use of gender: La blusa es negra (The blouse is black). The word *blusa* is feminine and needs a feminine article. There are, however, a few exception words that end in *-o* that are feminine and some that end in *-a* that are masculine. The following is an example: Hay muchas ciudades en el mapa (There are many cities on the map). Although it ends in *-a*, the word *mapa* is masculine and needs a masculine article. Also, there are many words that have ambiguous endings, such as *-e*, *-r*, and *-l*. The gender of these words must be simply memorized. The following is an example of an exception word: La mujer tiene dos hijos (The woman has two sons). The word *mujer* is feminine and needs a feminine article. In this experiment, eight pairs of sentences (4 marked, 2 non-marked, and 2 opposite) were constructed using definite articles in order to test the recognition of masculine/feminine nouns.

The second structure tested was the usage of the prepositions *por* and *para*. Both can be translated as “for” in English. *Por* and *para* have similar uses, but they cannot be

interchanged. Specific English equivalents of *por* are by, by means of, during, and in exchange for. The following sentence is an example of the use of *por*: *Nosotros hablamos por teléfono* (We speak by means of a phone). *Para* has similar English equivalents including in order to, to be given to, by (deadline), in the direction of, to be used for, and in the employment of. The following sentence is an example of the use of *para*: *Este libro es para Ud* (This book is for you). Twelve pairs of sentences containing *por* or *para* were used to test if participants could determine their proper usage. The following were included: money, time, toward, exchange, use, during, by (2), in order, deadline, giving, and employ.

The third structure tested was the usage of *ser* and *estar*. Both verbs are translated as “to be” and are not interchangeable. *Ser* is used in conjunction with the preposition *de* (of, from) to express origin and possession and to tell what something is made of. An example of the use of the structure *ser* is the following: *El es de Cuba* (He is from Cuba). *Estar* is used to express location and condition. An example of the use of the structure *estar* is the following: *Hector está cansado* (Hector is tired). However, *ser* and *estar* both have many other uses. In the study, eight pairs of sentences were administered using *ser* or *estar*. The following subtypes were used: adjective (3), possession, location, profession, origin, and materials. This tested if the participants could differentiate between the verbs’ distinct meanings.

The fourth structure tested was the usage of the past tenses: preterite and imperfect. These tenses are commonly used in the Spanish language and are often sources of confusion for non-native speakers. The preterite tense is used in order to express completed actions. The following is an example: *La chica bailó a las tres* (The

girl danced at 3:00). The preterite tense is used because the prepositional phrase, *a las tres*, expresses a finished action. The imperfect tense is used to express actions that are habitual, interrupted, or descriptive. The following is an example: *La chica bailaba todos los sábados*, (The girl danced every Saturday), an habitual phrase. In the experiment, seven pairs of similar sentences, using a verb conjugated in the preterite or imperfect tense, were constructed. The three subclasses used were regular (4), phrase (2), and special case (1). They were used to test if participants could determine which past tense should be used.

The fifth structure was the subjunctive tense. This tense is the most difficult concept for native English speakers to comprehend. The subjunctive mood is used in order to mention an action or condition that is unreal. It is usually placed in subordinate clauses. The subjunctive tense is often triggered by an independent clause expressing influence, emotion, or doubt, plus the word *que*, which is equivalent to the English word *that*. The following is an example sentence: *Es necesario que los estudiantes estudien mucho* (It is necessary that the students study a lot). The influential clause, *es necesario que*, signals the subjunctive use of the verb *estudiar*; therefore, *estudien* is used instead of *estudian*. In this study, eight pairs of similar sentences using the present indicative or the subjunctive tenses were constructed. Regular subjunctive (6) and imperfect subjunctive (2) were the substructures tested. Subjects had to determine if the right tenses were used.

The last structure considered was irregular verbs. For the preterite tense, most verbs follow a common pattern. Verbs ending in *-ar* generally end in *-é*, *-aste*, *-ó*, *-amos*, *-asteis*, and *-aron*. The *-er* and *-ir* verbs end in *-í*, *-iste*, *-ió*, *-imos*, *-isteis*, and *-ieron*. However, some verbs have irregular conjugations in the preterite tense; the roots of the

verbs or the endings may be changed. The majority of these words have to be memorized. An example of an irregular verb in the preterite tense is the following: La chica puso el libro en la mesa (The girl put the book on the table). The verb poner is conjugated as puso instead of ponó; the root of the word is changed. Irregular verbs (4 -er, 1 -ar, and 2 -ir verbs) were tested in this experiment by producing seven pairs of sentences using regular endings for the verb as the proper irregular endings.

### Procedure

All of the 100 sentences were randomized and tape-recorded, using the voice of a male native Spanish speaker of Venezuela. On the tape, each sentence was read once, with a short pause between each sentence.

Participants listened to the tape-recorded sentences on separate tape players. They were informed to listen to each statement carefully and to judge the grammaticality of each sentence. The subjects were told to circle yes if the sentence was correct and no if the sentence was incorrect.

In addition, participants completed a demographic questionnaire concerning their backgrounds and their Spanish education. (See appendix B).

## **Results**

### Data Analysis

A 3 (levels of instruction: 2000, 3000-4000, native) x 6 (structure type: gender, por/para, ser/estar, preterite/imperfect, subjunctive, irregular verbs) mixed 2-way ANOVA was used. The between subjects factor was the level of proficiency. The within subjects factor was the structure type. Tukey post-hoc tests were used when significant differences were found. As in Johnson and Newport (1989), only the ungrammatical



sentences were analyzed. Analyzing the ungrammatical items tested the subjects' knowledge of the correct usage of the grammatical structures.

### General Analysis

The analysis on all of the ungrammatical sentences showed a significant effect of level with  $F(2, 34) = 50.19, p < 0.0001$ . As shown by Tukey post-hoc tests, there was a significant difference between all levels. The intermediate level (2000) committed errors at  $\underline{M} = 56\%$ , the advanced level (3-4000) committed errors at  $\underline{M} = 33\%$ , and the native level committed errors at  $\underline{M} = 7\%$ . There was a significant effect of type with  $F(5, 160) = 10.93, p < 0.0001$ . As shown in table 2, participants performed better on some structures, including *ser/estar* and irregular verbs, than on other structures, like *preterite/imperfect* and *subjunctive*. In addition, there was a significant interaction between type and level with  $F(10, 160) = 5.81, p < 0.0001$ . Tukey post-hoc tests found significant differences on certain grammatical structures. Level was found significant for gender at  $F(2, 34) = 31.33, p < 0.0001$ ; a significant difference was found between the error rates of all levels: intermediate (63%), advanced (25%), and native (1%). Level was found significant for *por/para* with  $F(2, 34) = 28.66, p < 0.0001$ ; a significant difference was found between the error rates of all levels: intermediate (57%), advanced (35%), and native (4%). Level was found to be significant for *ser/estar* with  $F(2, 34) = 13.75, p < 0.0001$ . There was a significant difference between the error rates of the intermediate level (38%) and the advanced level (15%) and between the intermediate level and the native level (5%); there was no significant difference between the advanced and native levels. Level was found significant for the *subjunctive* with  $F(2, 34) = 36.71, p < 0.0001$ . There were significant differences between the intermediate level (68%) and

the native level (1%) and between the advanced level (53%) and the native level. There was no significant difference between the intermediate and advanced levels. Level was found significant for irregular verbs with  $F(2, 34) = 28.02$ ,  $p < 0.0001$ . All of the levels were significantly different from each other. The intermediate level had an error rate of 53%, the advanced level had an error rate of 30%, and the native level had no errors. There was no significant difference between levels for the preterite/imperfect structures.

### Analysis of the Structures

The same analysis was used to analyze the subtypes of the individual structures. Recall for gender that there were three subtypes: marked, unmarked, and opposite. There was a main effect of level with  $F(2, 32) = 38.92$ ,  $p < 0.0001$  and gender subtype with  $F(2, 64) = 4.83$ ,  $p < 0.05$ . As shown on Table 3, the participants performed better on the subtypes of marked nouns than on the non-marked nouns and the opposite nouns. There was also a significant interaction between gender subtype and level,  $F(4, 64) = 3.39$ ,  $p < 0.05$ . Level for the marked sentences was found significant with  $F(2, 34) = 10.21$ ,  $p < 0.0005$ . A tukey post-hoc test found a significant difference in error rate between the natives and both the intermediate and advanced levels. There was no significant difference between the intermediate and advanced levels. Level for the unmarked sentences was found significant with  $F(2, 34) = 23.71$ ,  $p < 0.0001$ . A tukey post-hoc test found a significant difference between the intermediate level and both the advanced and native levels. There was no significant difference between the advanced and native levels. Level for the opposite sentences was found significant with  $F(2, 34) = 34.30$ ,  $p < 0.0001$ . A tukey post-hoc test found significant differences between the intermediate level and both the advanced and native levels.

There was a main effect of level for *por/para* with  $F(2, 32) = 27.55, p < 0.0001$  and subtype,  $F(10, 320) = 2.38, p < 0.01$ . Recall for *por/para* that there were 11 subtypes: money, exchange, time, giving, employing, use, by, deadline, toward, during, and in order. As shown in Table 4, participants performed better on the in order, the by, and the during statements than on the toward and use statements. There was, however, no significant interaction between subtype and level. The analysis was included, however, in order to show how the groups performed on each subtype. Level for money and exchange were found significant at  $F(2, 34) = 5.91, p < 0.01$  and  $F(2, 34) = 6.86, p < 0.01$ , respectively. Tukey post-hoc tests found significant differences between the natives and both the intermediate and advanced levels; there were no significant differences between the intermediate and advanced levels. Level for the sentences concerning time, giving and employ were found significant at  $F(2, 34) = 14.48, p < 0.0001$ ,  $F(2, 34) = 7.60, p < 0.0001$ , and  $F(2, 34) = 7.11, p < 0.01$ , respectively. Tukey post-hoc tests found significant differences between the intermediate levels and both the advanced and native levels; there were no significant differences between the advanced and native levels. Level for the sentences concerning usage ( $F(2, 34) = 6.09, p < 0.01$ ), by ( $F(2, 34) = 6.56, p < 0.005$ ), and deadline ( $F(2, 34) = 4.57, p < 0.05$ ) were found significant. Tukey post-hoc tests found significant differences between the intermediate and native levels; there were no differences between the advanced level and the intermediate level or native level. In addition, there were no significant differences in levels for the sentences containing statements of toward, during, or order.

Recall for *ser/estar* that there were 6 subtypes: adjectives, possession, location, profession, origin, and material. There was a main effect of level for *ser/estar*,  $F(2, 32) =$

12.88,  $p < 0.0001$  and subtype,  $F(5, 160) = 3.97$ ,  $p < 0.01$ . As shown in Table 5, participants performed better on origin, profession, and location than on adjectives and possession. There was no significant interaction between subtype and level. The analysis was included in order to show how the groups performed on each subtype. Level for the sentences concerning adjectives was significant at  $F(2, 34) = 7.55$ ,  $p < 0.01$ . There was a significant difference between the intermediate and both the advanced and native levels. There was no significant difference between the advanced and native levels. Level for the sentences concerning possession was significant at  $F(2, 34) = 4.57$ ,  $p < 0.05$ . There was a significant difference between the intermediate and native levels. There were no significant differences between the advanced and intermediate or native levels. Level for the sentences concerning location was significant at  $F(2, 34) = 3.91$ ,  $p < 0.05$ . There was a significant difference between the intermediate and native levels. There were no significant differences between the advanced level and both the intermediate and native levels. Level at the sentences concerning materials was significant at  $F(2, 34) = 5.31$ ,  $p < 0.05$ . There was a significant difference between the intermediate and native levels. There were no significant differences between the advanced level and the intermediate or native levels. In addition, there were no significant differences in level for the sentences concerning profession and origin.

Recall for preterite/imperfect that there were 3 subtypes: regular, phrase, and special case. Although the initial analysis of preterite/imperfect was not significant, there was a significant difference between subtypes,  $F(2, 34) = 5.52$ ,  $p < 0.01$ . As shown in Table 6, participants performed better on the regular than on the phrase and special subtypes. In addition, there was no significant interaction between type and level. The

analysis was included in order to show how the groups performed on each subtype. The regular sentences were found significant at  $F(2, 34) = 3.86$ ,  $p < 0.05$ . There was a significant difference between the intermediate and advanced levels. There were no significant differences between the native and both the intermediate and advanced groups. The subcategories of phrase and special case were not significant.

Recall for subjunctive that there were 2 subtypes: present and imperfect. There was a main effect in level for the subjunctive sentences with  $F(2, 32) = 30.41$ ,  $p < 0.0001$ . There was no significant difference in type or a significant interaction between the subtype and level. The analysis was included in order to show how the groups performed on each subtype. Level for the present sentences was significant at  $F(2, 34) = 30.10$ ,  $p < 0.0001$ . There were significant differences between the native level and both the intermediate and advanced levels. There was no significant difference between the intermediate and advanced levels. Level for the imperfect sentences was significant at  $F(2, 34) = 12.11$ ,  $p < 0.0001$ . There were significant differences between the native level and both the intermediate and the advanced levels. There were no significant differences between the intermediate and advanced levels. All means are shown on Table 7.

Recall for the irregular verbs that there were 3 subtypes: -er, -ir, and -ar verbs. There was a main effect in level for irregular verbs with  $F(2, 32) = 33.30$ ,  $p < 0.0001$  and irregular verb subtype with  $F(2, 64) = 5.52$ ,  $p < 0.01$ . In addition, there was a significant interaction between subtype and level,  $F(4, 64) = 3.88$ ,  $p < 0.01$ . As shown in table 8, participants performed better on the -er than on the -ar and -ir verbs. Level for the sentences containing -er verbs was significant at  $F(2, 34) = 11.73$ ,  $p < 0.001$ . There was a significant difference between the intermediate and native levels. There was no

significant difference between the advanced level and both the intermediate and native levels. Level for the sentences containing –ir verbs was significant at  $F(2, 34) = 14.69$ ,  $p < 0.0001$ . There was a significant difference between the native levels and both the intermediate and advanced levels. Level for the sentences containing –ar verbs was significant at  $F(2, 34) = 20.25$ ,  $p < 0.0001$ . There were significant differences between the intermediate level and both the advanced and native levels. There were no significant differences between the advanced and native levels.

### **Discussion**

Overall, the intermediate, the advanced, and the native levels were significantly different from each other. The advanced students had lower error rates than the intermediate level and had higher error rates than the native speakers. The native level had the lowest error rates on all structures. This showed that with increased instruction, proficiency increased. The non-natives, however, did not approach native fluency.

When looking at the specific grammatical structures tested, similar trends were found. On the grammatical structures of gender, por/para, and irregular verbs, all groups were significantly different from each other. On the gender statements, the intermediate level made more errors than the advanced level. Both groups had higher error rates than the native speakers. The advanced level and the native level performed similarly on the non-marked and opposite subtypes. Both non-native groups differed from the natives on the marked subtype. These differences can be explained by the fact that the genders of non-marked and opposite nouns are usually memorized. Advanced students have more experience with grammar rules than the intermediate speakers do. This is why the

advanced speakers performed similarly to that of the native speakers on the non-marked and the opposite substructures.

On the eight of the eleven substructures of *por/para*, the intermediate level had higher error rates than the advanced level; both groups had higher error rates than the native level. On the money statements and the toward statements, the advanced level had higher error rates than the intermediate level; the error rates were the same on the exchange statements. The advanced students are somewhat removed from the subtle differences. This can be explained by the fact that the proper usage of *por* and *para* is stressed in the early levels. The advanced and native groups performed similarly on the substructures of usage, by, and deadline. The natives differed from the non-natives on the substructures of exchanging, giving, and employing.

On the irregular verb statements, the intermediate level had higher error rates than the advanced level. Both had higher error rates than the natives. The advanced and native speakers performed similarly on the *-er* and the *-ar* verbs; the *-er* and *-ar* verbs used were *poner* (to put), *poder* (to be able to), *hacer* (to do or make), *saber* (to know), and *dar* (to give). The native speakers differed from the non-natives on the *-ir* verbs; the *-ir* verbs used were *dormir* (to sleep) and *decir* (to say). These differences can be explained by the fact that irregular verb conjugations are usually memorized as learning progresses. In addition, learners often encounter *-ar* and *-er* verbs more frequently than *-ir* verbs.

The advanced and native levels performed similarly on *ser/estar*. Both were significantly different from the intermediate group. The advanced learners approached native fluency on four of the six sub-structures, including location, profession, origin, and

materials. All levels performed similarly on profession and origin. Certain aspects of *ser/estar* are difficult for beginning learners, while others are easy to learn because some are very high frequency. Sentences of origin, profession, and location are frequently used in conversation. Learners had little difficulty overall with *ser/estar* because their differentiation is emphasized in beginning Spanish classes. This explains the differences and similarities between the intermediate level and both the advanced and the native levels.

The non-natives differed from the natives on the subjunctive statements. This was expected because the subjunctive tense is one of the most difficult aspects of Spanish grammar for L2 learners. The intermediate and advanced learners had higher error rates than the native levels. The error rates of the advanced learners, however, were lower than those of the intermediate learners. This showed that the advanced learners had some knowledge of the structure. In addition, it revealed that the advanced students need more instruction in this area.

There was no significant difference found between the groups on the preterite/imperfect sentences. High error rates were present in all levels. Although high error rates were expected for the non-natives, they were not expected for the natives. The high error rates can be explained by the ambiguity of the sentences. In many cases, for native speakers, it would be correct to use either tense. For example, the sentence La chica bailaba todos los sábados (The girl danced every Saturday) can be viewed as an habitual past action or a past action that occurred over a specific period of time. The imperfect or the preterite tense could be appropriate. In addition, some of the sentences were awkward. Many of the participants could have been reacting to the content of the



sentences rather than the grammatical structure. Because of the sentence selection, the analysis could not adequately assess the structure tested.

The grammatical judgement task was somewhat difficult for the non-natives because it was testing grammatical competence in an oral manner. Many non-natives are not accustomed to making grammatical judgements of oral statements. They are generally more experienced with written grammar. The error rates of the natives can be partially explained by dialectal differences; certain dialects are more tolerant of grammatical differences than others. The error rates of all participants may have been affected by the tape-recording quality. Some statements were not as clearly spoken as other statements. This may have caused some confusion.

### **General Discussion**

The results of the translation task showed that it is easier for learners to translate from L2 to L1 than from L1 to L2. In addition, learners were faster when translating organized lists than unorganized lists. The advanced group did not differ from the native group on the translation task. The advanced group and the native speakers had similar translation rates and error rates. The results of the grammatical judgement task showed that learners are better on some structures than they are on other structures. The intermediate group had more difficulty than the advanced group on the grammatical structures because the structures were tested on the sentence level. Overall, the advanced group performed better than the intermediate group at the task. The advanced group, however, differed from the natives on most structures.

The results of this study help to support the fact that second language learning occurs gradually. Second language acquisition is a process that occurs in three steps:

word, sentence, and text. According to the guidelines used by the American Council on the Teaching of Foreign Languages (as cited in Ramírez, A., 1992), learners are categorized according to their communicative abilities. Beginning L2 learners function at the word level; that is, their knowledge of the language is mostly vocabulary and phrases. Intermediate learners function at the sentence level; that is, they are able to communicate using sentences. Advanced learners can function at the text level; that is, they can produce complex narratives and communicate effectively. This study examined both the word level and sentence level through a translation task and a grammatical judgement task in order to determine how increased instruction affects acquisition.

The findings of this study are important for university Spanish instructors. The results of the translation task shows that students are successfully learning Spanish vocabulary. In addition, students need more practice at translating from English to Spanish because it has been indicated by both the results of Kroll and Stewart (as cited in Kroll, J. F. and Sholl, A., 1992) as well as this study that translating from L1 to L2 is difficult for second language learners. The results of the grammatical judgement task provide useful information on specific grammatical structures. It shows that more emphasis should be placed on the teaching of the subjunctive tense and the preterite/imperfect tenses. It suggests that less time can be dedicated to *ser/estar*. It also implies that grammar instruction should be a continuous aspect of any Spanish program. Although the advanced learners approached native fluency on some structures, they had difficulties on other structures. Continued grammar instruction will help ensure that the grammatical rules are really learned. In addition, oral communication should be emphasized more. As previously mentioned, many second language learners have little

exposure to oral communication. By emphasizing oral communication, students will be able to detect oral grammatical errors as well as written grammatical errors.

The experiments were designed to examine two linguistic phenomena: lexical processing and grammatical development. Unfortunately, many problems surfaced when designing and conducting the experiments. Problems first occurred when designing the stimuli for the translation tasks. Some words may have been easier to recall than other words; a better selection of words should have been chosen. In addition, a better counterbalancing system should have been used. This would have increased the reliability of the experiment. Problems also occurred when recording the grammar tape. The speaker had difficulty in reciting the sentences at the same rate. The spacing between the sentences sometimes varied. In addition, many of the sentences may have been somewhat ambiguous. This probably caused problems for the participants. In both experiments, it was extremely difficult finding participants, especially advanced students. Having more participants would have increased the ability to generalize these findings to all university classroom learners of Spanish. All of these suggestions should be taken into consideration when conducting future research in both of these areas.

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**Appendix A**Organized List

Shoes	(Zapatos)
Swim Suit	(Traje de baño)
Coat	(Abrigo)
Tie	(Corbata)
Shirt	(Camisa)
Dress	(Vestido)
Suit	(Traje)
Skirt	(Falda)
Watch	(Reloj)
Jacket	(Chaqueta)

Unorganized List

Tape	(Cinta)
Living Room	(Sala)
Library	(Biblioteca)
Magazine	(Revista)
Month	(Mes)
Gift	(Regalo)
Curtain	(Cortina)
Silver	(Plata)
Wedding	(Boda)
Door	(Puerta)

Unorganized List

Kitchen	(Cocina)
Cheese	(Queso)
Notebook	(Cuaderno)
Comb	(Peine)
Rain	(Lluvia)
Key	(Llave)
Gold	(Oro)
Letter	(Carta)
Cat	(Gato)
Window	(Ventana)

Organized List

Nose	(Nariz)
Arms	(Brazos)
Back	(Espalda)
Hair	(Pelo)
Mouth	(Boca)
Ears	(Orejas)
Eyes	(Ojos)
Head	(Cabeza)
Feet	(Pies)
Legs	(Piernas)

## Appendix B

1. Circle your gender: Female Male
2. What is your age?
3. What is your classification?
4. What is your major?
5. What is your native language?
6. Have you ever been to a Spanish-speaking country? If so, where and for how long?
7. Have you previously taken Spanish? If so, where and for how long?
8. Why are you taking Spanish?
9. Do any of your relatives or friends speak Spanish?
10. Do you speak Spanish outside of class? Why or why not?
11. Which Spanish courses have you completed?
12. Which Spanish course(s) are you currently enrolled in?
13. What is your grade in your current Spanish course?
14. In your opinion, what is the best aspect of Spanish: grammar, speaking, culture, or literature?
15. Rate your fluency in Spanish on a scale of 1 to 5:  
(1) poor (2) fair (3) good (4) very good (5) excellent

Table 1

Samples of Grammatical Structures

Structure		Example	
1.	Gender	a)	[C] <b>La</b> (fem. art.) <b>blusa</b> (fem. n) es negra.
			[I] <b>El</b> (masc. Art.) <b>blusa</b> (fem. n) es negra.
			[T] The blouse is black.
		b)	[C] Hay muchas ciudades en <b>el</b> (masc. art.)
			<b>mapa</b> (masc. n).
			[I] Hay muchas ciudades en <b>la</b> (fem. art.)
			<b>mapa</b> (masc. n).
			[T] There are many cities on the map.
		c)	[C] <b>La</b> (fem. art.) <b>mujer</b> (fem. n) tiene dos hijos.
			[I] <b>El</b> (masc. art.) <b>mujer</b> (fem. n) tiene dos hijos.
			[T] The woman has two sons.
2.	Por/Para	a)	[C] Nosotros hablamos <b>por</b> teléfono.
			[I] Nosotros hablamos <b>para</b> teléfono.
			[T] We speak by phone.
		b)	[C] Este libro es <b>para</b> Ud.
			[I] Este libro es <b>por</b> Ud.
			[T] This book is for (to be given) to you.
3.	Ser/Estar	a)	[C] El <b>es</b> de Cuba.
			[I] El <b>está</b> de Cuba.
			[T] He is from Cuba. (origin)
		b)	[C] Hector <b>está</b> cansado.

Table 1 continued

Samples of Grammatical Structures

Structure		Example
		[I] Hector <b>es</b> cansado.
		[T] Hector is tired.
4.	Preterite/Imperfect	a) [C] La chica <b>bailó a las tres</b> .
		[I] La chica <b>bailaba a las tres</b> .
		[T] The girl danced at 3:00. (finished action)
		b) [C] La chica bailaba todos los sábados.
		[I] La chica <b>bailó todos los sábados</b> .
		[T] The girl danced every Saturday day. (habitual)
5.	Subjunctive	[C] Es necesario que los estudiantes <b>estudien</b> mucho.
		[I] Es necesario que los estudiantes <b>estudian</b> mucho.
		[T] It is necessary that the students study a lot.
6.	Irregular Verbs	[C] La chica <b>puso</b> el libro en la mesa.
		[I] La chica <b>ponó</b> el libro en la mesa.
		[T] The girl put the book on the table.

Note. [C]= correct; [I]= incorrect; [T]= translation; fem= feminine; art.= article; n= noun; masc.= masculine.



Table 2

Total Grammatical Structures

	<b>Gender</b>	<b>Por/ Para</b>	<b>Ser/ Estar</b>	<b>Pret/ Imp</b>	<b>Subj</b>	<b>Irr. Verbs</b>	<b>Level Error</b>
<b>Intmed.</b>	63% <sup>a</sup>	57% <sup>a</sup>	38% <sup>a</sup>	53% <sup>a</sup>	68% <sup>a</sup>	53% <sup>a</sup>	56%
<b>Adv.</b>	25% <sup>b</sup>	35% <sup>b</sup>	15% <sup>b</sup>	39% <sup>a</sup>	53% <sup>a</sup>	30% <sup>b</sup>	33%
<b>Native</b>	1% <sup>c</sup>	4% <sup>c</sup>	5% <sup>b</sup>	36% <sup>a</sup>	1% <sup>b</sup>	0% <sup>c</sup>	7%
<b>Rule Error</b>	34%	36%	22%	44%	46%	31%	35%

Note. The <sup>a, b, c</sup> superscripts are used to indicate whether or not groups are significantly different from each other. The groups that have the same superscripts do not significantly differ from each other. The groups that have different superscripts significantly differ from each other.

Table 3

Gender

	<b>Marked</b>	<b>Non-Marked</b>	<b>Opposite</b>	<b>Level Error</b>
<b>Intmed.</b>	50% <sup>a</sup>	67% <sup>a</sup>	87% <sup>a</sup>	64%
<b>Adv.</b>	30% <sup>a</sup>	10% <sup>b</sup>	30% <sup>b</sup>	25%
<b>Native</b>	0% <sup>b</sup>	0% <sup>b</sup>	5% <sup>b</sup>	1%
<b>Structure Error</b>	30%	32%	47%	34%

Note. The <sup>a, b, c</sup> superscripts are used to indicate whether or not groups are significantly different from each other. The groups that have the same superscripts do not significantly differ from each other. The groups that have different superscripts significantly differ from each other.

Table 4

Por/Para

	Money	Exchange	Time	Giving	Employ	Use
<b>Intmed.</b>	53% <sup>a</sup>	60% <sup>a</sup>	80% <sup>a</sup>	80% <sup>a</sup>	73% <sup>a</sup>	73% <sup>a</sup>
<b>Adv.</b>	60% <sup>a</sup>	60% <sup>a</sup>	30% <sup>b</sup>	20% <sup>b</sup>	30% <sup>b</sup>	50% <sup>ab</sup>
<b>Native</b>	0% <sup>b</sup>	0% <sup>b</sup>	0% <sup>b</sup>	0% <sup>b</sup>	10% <sup>b</sup>	10% <sup>b</sup>
<b>Structure Error</b>	40%	43%	43%	33%	38%	48%

	By	Deadline	Toward	During	Order	Level Error
<b>Intmed.</b>	43% <sup>a</sup>	53% <sup>a</sup>	53% <sup>a</sup>	40% <sup>a</sup>	33% <sup>a</sup>	57%
<b>Adv.</b>	15% <sup>ab</sup>	40% <sup>ab</sup>	60% <sup>a</sup>	30% <sup>a</sup>	10% <sup>a</sup>	39%
<b>Native</b>	0% <sup>b</sup>	0% <sup>b</sup>	30% <sup>a</sup>	0% <sup>a</sup>	0% <sup>a</sup>	4%
<b>Structure Error</b>	19%	47%	48%	26%	14%	37%

Note. The <sup>a, b, c</sup> superscripts are used to indicate whether or not groups are significantly different from each other. The groups that have the same superscripts do not significantly differ from each other. The groups that have different superscripts significantly differ from each other.

Table 5

Ser/Estar

	Adj.	Poss.	Loc.	Prof.	Origin	Mat.	Level Error
<b>Intmed.</b>	47% <sup>a</sup>	53% <sup>a</sup>	40% <sup>a</sup>	20% <sup>a</sup>	0% <sup>a</sup>	47% <sup>a</sup>	38%
<b>Adv.</b>	17% <sup>b</sup>	40% <sup>ab</sup>	10% <sup>ab</sup>	0% <sup>a</sup>	10% <sup>a</sup>	10% <sup>ab</sup>	15%
<b>Native</b>	13% <sup>b</sup>	0% <sup>b</sup>	0% <sup>b</sup>	0% <sup>a</sup>	0% <sup>a</sup>	0% <sup>b</sup>	5%
<b>Structure Error</b>	29%	34%	20%	9%	3%	23%	22%

Note. The <sup>a, b, c</sup> superscripts are used to indicate whether or not groups are significantly different from each other. The groups that have the same superscripts do not significantly differ from each other. The groups that have different superscripts significantly differ from each other.

Table 6

Preterite/Imperfect

	<b>Regular</b>	<b>Phrase</b>	<b>Special</b>	<b>Level Error</b>
<b>Intmed.</b>	47% <sup>a</sup>	60% <sup>a</sup>	67% <sup>a</sup>	54%
<b>Adv.</b>	23% <sup>b</sup>	60% <sup>a</sup>	60% <sup>a</sup>	39%
<b>Native</b>	28% <sup>b</sup>	50% <sup>a</sup>	40% <sup>a</sup>	36%
<b>Structure Error</b>	34%	57%	57%	45%

Note. The <sup>a, b, c</sup> superscripts are used to indicate whether or not groups are significantly different from each other. The groups that have the same superscripts do not significantly differ from each other. The groups that have different superscripts significantly differ from each other.

Table 7

Subjunctive

	<b>Present</b>	<b>Imperfect</b>	<b>Level Error</b>
<b>Intmed.</b>	67% <sup>a</sup>	70% <sup>a</sup>	68%
<b>Adv.</b>	55% <sup>a</sup>	45% <sup>a</sup>	54%
<b>Native</b>	0% <sup>b</sup>	5% <sup>b</sup>	1%
<b>Structure Error</b>	44%	44%	44%

Note. The <sup>a, b, c</sup> superscripts are used to indicate whether or not groups are significantly different from each other. The groups that have the same superscripts do not significantly differ from each other. The groups that have different superscripts significantly differ from each other.

Table 8

Irregular Verbs

	<b>-ER</b>	<b>-AR</b>	<b>-IR</b>	<b>Level Error</b>
<b>Intmed.</b>	40% <sup>a</sup>	63% <sup>a</sup>	87% <sup>a</sup>	57%
<b>Adv.</b>	20% <sup>ab</sup>	50% <sup>bc</sup>	30% <sup>ab</sup>	27%
<b>Native</b>	0% <sup>b</sup>	0% <sup>c</sup>	0% <sup>c</sup>	0%
<b>Structure Error</b>	23%	41%	46%	32%

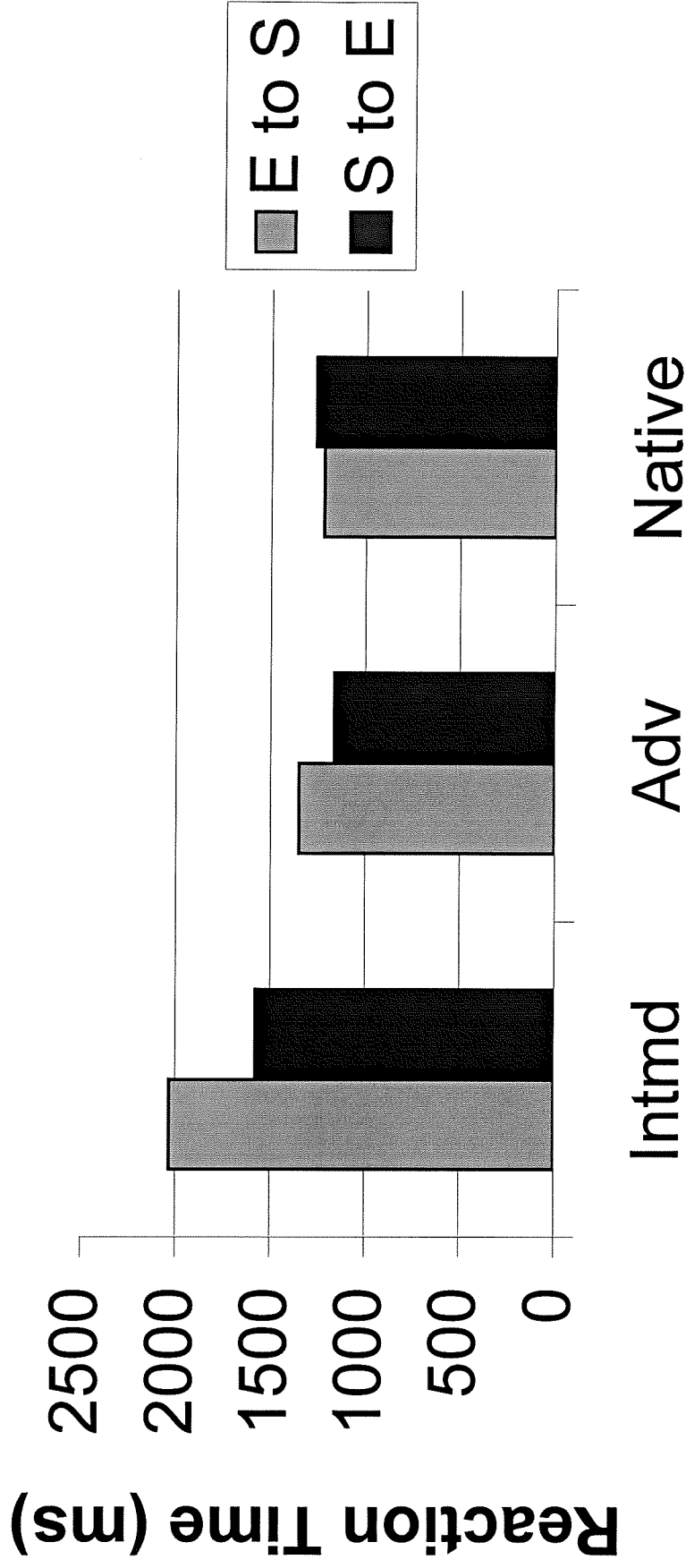
Note. The <sup>a, b, c</sup> superscripts are used to indicate whether or not groups are significantly different from each other. The groups that have the same superscripts do not significantly differ from each other. The groups that have different superscripts significantly differ from each other.

Figure Caption

Figure 1. Mean translation reaction times from English to Spanish and from Spanish to English by proficiency level.



# Translation Directions



Proficiency Level