Predicting Near-Native Pronunciation in Spanish as a Foreign Language

A. Raymond Elliott

1. Introduction

Researchers are divided on the issue of an adult second language learner's ability to acquire native or near-native pronunciation. While some have speculated that acquiring native-speaker pronunciation in the L2 may be biologically determined (Chastain 1988; Krashen 1982; Scovel 1975; Selinker 1972; Walsh and Diller 1981; Leaver 1986; Stansfield and Hansen 1983), others maintain that individual motivation (Suter 1976), affective factors (Guiora, Lane and Bosworth 1967; Suter 1976), formal training in auditory discrimination (Laeufer 1989) and phonetic production (Naimen, Frohlich, Stern, and Todesco 1978; Murakawa 1981) relate to an enhanced level of pronunciation accuracy in the L2. With such divergent points of view to consider, second and foreign language teachers are confronted with a crucial dilemma: to teach or not to teach pronunciation.

Studies examining the effects of formal instruction in pronunciation have yielded inconsistent and even contradictory results. Suter (1976) reported a non-significant relationship between formal instruction and the subjects’ pronunciation of English as a Second Language.1 Murakawa (1981) found that twelve weeks of phonetic instruction can improve the subjects’ articulation of individual allophones by adult learners of English. Neufeld and Schneiderman (1980) report similar findings indicating that adults are “able to achieve native-like proficiency in the prosodic and articulatory features of a second language” (105). They contend that this ‘native-like’ proficiency can be developed in “relatively short time...without serious disruption to the second language teaching program” (105). Significant improvement in foreign language production and perception of prosodic features was also reported by Gilbert

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1 Suter's (1976) findings must be interpreted with caution since the variable he used for "formal instruction" solely indicated whether the subjects had ever received formal instruction in pronunciation. This variable does not however assess the quality or type of instruction.
(1980), de Bot (1983), de Bot and K. Mailfert (1982) and McCandless and Winitz (1986). Pennington (1984) suggests however that the contradictory results reported in many pronunciation studies may be due to the diverse nature of the experimental designs and to differences in the training that was provided.

Some theoreticians, on the other hand, have speculated that cognitive variables, such as hemispheric dominance and field independence, may play an important role in second language acquisition (Leaver 1986; Oxford 1989; Scovel 1969; Krashen 1972, 1973; Krashen and Harshman 1972). Research on lateral cerebral dominance indicates that the two hemispheres of the cerebral cortex process, organize, and encode information differently: the left hemisphere is superior at tasks such as “reading, speaking, analytical reasoning, and arithmetic, and the right is better at spatial tasks, recognizing faces, and music” (Oxford 1989). The implication here is that the propensity to favor one hemisphere over the other may help or hinder progress depending upon the task in which the individual is engaged. Tasks requiring a more analytical left-brained approach may prove to be frustrating for a person who evidences a right-brained profile and vice-versa.

Also believed to be related to hemispheric dominance are field independence and field dependence (Brown 1987). Researchers (Chapelle and Roberts 1983, 1984; Hansen and Stansfield 1981) examining these constructs as predictors of L2 proficiency maintain that field independence is “closely related to classroom learning that involves analysis, attention to details, and mastering of exercises, drills and other focused activities” (Brown 1987), a description that coincides nicely with left-brain dominant characteristics. In their study, Chapelle and Roberts (1984) conclude that field independent individuals “may be good at language skills such as those employed in a classroom in which an analytic-type method is used”, whereas the field dependent individual “may be better at L2 acquisition (i.e., acquiring the language through integrative language use such as interaction with native speakers in social situations)”. While it appears that the more analytic nature of field independent individuals may aid them in learning grammar rules and the linguistic structures of the target language, “speaking ability may be more closely related to field-dependent behaviors than field-independent ones” (Hansen and Stansfield 1981). Hansen and Stansfield state that the field dependent individuals’ “strong interest in other people and attentiveness to social cues in the communication task perhaps leads to more effective communicative skills” in the target language.

2. Purpose of the study

The objective of the present study is to examine the acquisition of pronunciation by 66 undergraduate students enrolled in three sections of an intermediate Spanish course. The data were collected during the Fall semester of the 91-92 academic year at Indiana University, Bloomington. Thirty-two males and thirty-four females served as the subjects.
Using a control and two experimental groups, three separate regression analyses examined: 1) variables related to the subjects’ accuracy of pronunciation, 2) the effect of formal instruction in pronunciation, and 3) the relationship between “production” or pronunciation and the subjects’ knowledge of formal pronunciation rules, termed “metalinguistic awareness.”

The results reveal that biological variables such as field independence and right cerebral dominance predicted accuracy of pronunciation on the pre-test. However, of the variables considered, only formal instruction successfully predicted improvement in pronunciation. Further, the ability to describe the articulation of the target language allophones related significantly to the pronunciation of these sounds on the posttest, suggesting that metalinguistic awareness is related to better production.

3. The independent variables

In this study, the following independent variables were considered in order to account for the acquisition of near-native pronunciation (SPSS variable names are included in parentheses):

1. Attitude questionnaire (LIKERT): the subjects’ attitude/concern and strategies employed for improving their pronunciation of Spanish. At the beginning of the semester and just prior to the pronunciation treatment sessions, subjects were administered a Likert-type test (see Appendix) in order to assess the degree to which attitude toward or personal motivation for acquiring near-native pronunciation correlated with the subjects’ pronunciation accuracy. It was hypothesized that individuals who were more concerned about their L2 pronunciation would receive the highest ratings for their pronunciation of the target language. The attitude scale yielded a measure ranging from twenty (negative attitude) to 100 (positive attitude). The test consisted of fifteen positive and five negative statements with response categories ranging from five = “Always or almost always true of me” to one = “Never or almost never true of me.” Negatively-worded items were reversed in scoring before adding them to the test total. An SPSS item-analysis revealed an overall alpha coefficient of .9158 for this instrument.

2. Field Independence (FI) as measured by the Group Embedded Figures Test (GEFT). The GEFT (Witkin et al. 1971) contains eighteen complex figures within which simple geometrical figures are embedded. The subject’s task is to identify the simple figure within the complex. The instrument yields a continuous measure of FI with scores ranging from 0 to 18. The GEFT consists of three sections. The first contains seven very simple items used specifically for practice. Sections two and three each contain nine different, exceedingly complex figures.

3. Lateral cerebral dominance (LT, RT, INT): subject’s degree of left, right, and integrative dominance as measured by the Human Information
Processing Survey (Torrance et al. 1984). The HIPS contains forty multiple choice items that are indicative of the subject’s brain specialization. The test yields separate standard scores for the subjects’ degree of left, right, and integrative dominance.

4. Subject “metalinguistic awareness” or ability to describe the articulation of the following underlined set of Spanish allophones (HMWRK). The following allophones were chosen for this assignment: dedo, pipa, ropa, ganar, perro, hago, lata, tan bien, bebo, mismo, pero, and [a e i o u].

5. Pronunciation treatment (described below): The effect of formal instruction in pronunciation (DUMMY1 and DUMMY2)

Other variables which may explain differences in pronunciation ability were also included in the analysis. The control variables were as follows:

6. Gender (GEN)
7. Total number of years of formal instruction in Spanish (SPYRS)
8. Subjects who have traveled to a country where the target language is spoken (MDFT)
9. Relatives (RSREL): Subjects who have Spanish-speaking relatives
10. Subjects’ overall grade point average for Spanish alone (SPGPA)
11. Subjects’ overall grade point average for all courses combined (GPA)
12. Number of foreign languages other than Spanish studied or learned (OL)

4. The dependent variables

The dependent variables for the present study consisted of scores the subjects were awarded on a pronunciation pre and posttest. The subjects’ pronunciation of the target language was recorded at the beginning of the semester, and once again, at the end.

The pronunciation test consisted of four sections each designed to engage the subject in different types of pronunciation tasks. Sections I and II (See

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2 The items and allophones appearing in Section I of the pronunciation test were as follows:
GANAR, BEBER, CADA, CIERRA, DESDE, PERO, MAÑANA, ROPA, UN PESO, FUERTE, JOTA, HECHO, LIBRO, CABALLO, and PEGAMOS.

3 The Recorded Model for Sections I and II of the Pronunciation Test: The oral cues for Sections I and II of the pronunciation test were provided by a native Panamanian woman who came to the United States as an adult. The model's voice was recorded in a sound-proof booth using an Electrovoice RE16 microphone and an Ampex 351 recorder at 7.5 inches per second. A copy of the master tape was recorded directly from the Ampex 351 onto a Wollensak 2515 tape recorder. This was done to obtain a cassette recording for the lab session. The students were administered the test in the language laboratory and recorded themselves on a TS10 system. The student recorder and the master recorder were identical models: TSR 5924. The students' responses were recorded at 1 7/8ths inches per second. The student microphone headsets were TLH 20 dynamic sets with 200 ohms impedance. The tape recorder has a frequency range of 25-15,000 hertz — human speech is well within this range.
Appendix) were repetition exercises which required the students to repeat words and sentences after a native model. All subjects received the same native-speaker input. These sections were designed to gauge subject ability to imitate Spanish sounds, first, on a discrete word level and second, on a sentence level.

Section III (See Appendix) tested for grapheme-phoneme effects. Students were instructed to read a series of eighteen words in Spanish without a native model provided for imitation. The scores received on this section were used to determine the degree to which the individual graphemes (written letters) influenced the subject’s ability to produce the target language sounds.

Section IV was a free elicitation exercise in which the students were instructed to describe one of two pictures in Spanish — a classroom or a party. Although the subjects had the opportunity to tape themselves for ninety seconds, speaking time for some was as little as thirty seconds.

5. Evaluation of subjects’ pronunciation

5.1 Judges

The data were scored by a panel of three judges, all of whom possess knowledge of Spanish linguistics. The first judge is Chilean, working toward her Ph.D. in Spanish Linguistics at Indiana University. The second judge, from the United States, has a Bachelor of Arts Degree in Spanish from the Ohio State University. He spent seven years in Bogotá, Colombia teaching English as a Foreign Language and advanced courses in contrastive phonology. He possesses native fluency in Spanish and has native/near-native pronunciation. The experimenter served as the third judge on the panel.

5.2 Selection of allophones

Only those allophones that were taught formally to the subjects in the experimental sections were selected for scoring. Allophones were selected based on the level of difficulty they present to native American speakers. Sounds that were believed to be more difficult for native American speakers (e.g., the trilled and flap r, the non-fricative continuants: b, d, g and the Spanish postdentals: d and t, etc.) were tested more than once in any one section. The following allophones were concentrated on in the present analysis: \([a \ e \ i \ o \ u\ b\ b\ d\ d\ g\ g\ p\ t\ k, \text{grapheme} \ “h”=\text{absence of sound}, \ s\ z\ r\ \bar{r}\ \bar{n}, \ m\ \text{of} /n/ \ \text{phoneme}]\). Although the \([w]\) and \([\text{grapheme} \ h=0]\) are not difficult, it was decided to include them in the analysis to account for the influence of spelling on pronunciation.

5.3 Scoring

Recordings of pre and posttest materials were played on a Wollensak 2505 cassette recorder. All recordings were pooled together so the judges did not know which test they were grading (e.g., the pre or posttest) or the section it
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was from. Scoring of the subjects’ pronunciation was done approximately 12-13 weeks after the end of the semester.

For Sections I-III, the judges were instructed to award the subjects a score ranging from one, incorrect target sound, to three, correct target sound. A score of two indicated that the subject made an incorrect attempt or approximation of the correct target sound (e.g., use of a guttural r for the trilled variant). The judges were given the following instructions, based on Richard Suter’s (1978) investigation of English pronunciation accuracy by non-native adult speakers, for scoring Section IV of the test:

1. The rating you give a speaker will reflect your “overall impression” of his/her pronunciation compared to that of a native speaker. Consciously or subconsciously you will be affected by the accuracy with which s/he pronounces the sounds of Spanish and also very much by her/his patterns of rhythm, stress, and intonation. These last three features are apt to be quite important.

2. **Make discrimination**: You must not lump scores into the middle range. The scores awarded range from 1 to 5 and are analogous to the A through F grading system. A score of 5, or an A, indicates that the subject’s pronunciation of the target language is indistinguishable from that of a native speaker of the language. On the other hand, a score of 1, or an F, means that the individual has no mastery or very little mastery of the target language phonological system. The subject’s interlanguage phonology is marked heavily by his/her English and at times is almost unintelligible.

3. Speakers will display varying degrees of accuracy in grammar, apparent intelligence, humor, story telling ability, etc. None of these is relevant to your task (i.e., to rate pronunciation) and therefore, none of these should affect your judgment.

4. Do not discuss your rating with any other judge at any time.

The scoring method provided approximately 35,244 total observations among the three judges of the subjects’ pronunciation of the target language.

5.4 **Interrater reliability**

The judges’ scores were analyzed statistically to determine their intercorrelation. The interrater reliability coefficients obtained ranged from .96-.97 for the pretest and .97-.98 for the posttest, thus indicating a high degree of agreement between the individual judges’ ratings per subject.

6. **Variables which predict pronunciation accuracy**

In the first multiple regression analysis, twelve variables believed to predict the subjects’ accuracy of pronunciation effectively were examined in relation to
scores the subjects were awarded on the pronunciation pretest. All 66 subjects were pooled together since none of the students in the experimental sections had received any formal instruction in pronunciation.

The 5 dependent variables in this analysis were the scores the subjects received on the pronunciation pretest: Sections I-IV and the total test score for all sections combined (variable PRETOT).

The following independent variables were chosen for this analysis: 1) LIKERT, 2) GEFT, 3) LT, 4) RT, 5) INT, 6) GEN, 7) SPYRS, 8) MDFT, 9) RSREL, 10) SPGPA, 11) GPA, and 12) OL.

A preliminary multiple regression analysis indicated that none of the control variables (gender, foreign travel, Spanish-speaking relatives, overall college GPA, GPA in Spanish alone, and total number of other languages studied) ever achieved significance in predicting the subjects’ ability to produce the target language allophones. However, total number of years of formal instruction in Spanish approached significance at the $p<.08$ level. That is to say that students who had more formal instruction in the language tended to have better pronunciation than those who had less instruction.

Table 1. Multiple regression analysis using GEFT, LIKERT, HIPS as predictors of accuracy in pronunciation on the pretest

<table>
<thead>
<tr>
<th>Dep. Variable</th>
<th>Intercept</th>
<th>LIKERT</th>
<th>GEFT</th>
<th>RT.DOM.</th>
<th>$R^2$</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCRPRE 1</td>
<td>49.66</td>
<td>.043</td>
<td>.142</td>
<td>------</td>
<td>.037</td>
<td>.3004</td>
</tr>
<tr>
<td></td>
<td>(3.16)</td>
<td>(.043)</td>
<td>(.114)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SCRPRE 2</td>
<td>36.37</td>
<td>.235</td>
<td>.338</td>
<td>------</td>
<td>.240</td>
<td>.0002</td>
</tr>
<tr>
<td></td>
<td>(4.26)</td>
<td>(.059)</td>
<td>(.15)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SCRPRE 3</td>
<td>45.24</td>
<td>.201</td>
<td>.404</td>
<td>------</td>
<td>.172</td>
<td>.0026</td>
</tr>
<tr>
<td></td>
<td>(4.96)</td>
<td>(.068)</td>
<td>(.179)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SCRPRE 4</td>
<td>-.90</td>
<td>.019</td>
<td>.044</td>
<td>.009</td>
<td>.224</td>
<td>.0012</td>
</tr>
<tr>
<td></td>
<td>(.66)</td>
<td>(.006)</td>
<td>(.017)</td>
<td>(.004)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PRETOT</td>
<td>131.22</td>
<td>.499</td>
<td>.927</td>
<td>------</td>
<td>.181</td>
<td>.0018</td>
</tr>
<tr>
<td></td>
<td>(11.61)</td>
<td>(.160)</td>
<td>(.421)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The group means and standard deviations for non-binary independent variables were:

<table>
<thead>
<tr>
<th>Ind. Variable</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEFT</td>
<td>11.409</td>
<td>5.032</td>
</tr>
<tr>
<td>LIKERT</td>
<td>63.212</td>
<td>13.180</td>
</tr>
<tr>
<td>LTDOM</td>
<td>103.439</td>
<td>18.139</td>
</tr>
<tr>
<td>RTDOM</td>
<td>100.227</td>
<td>20.807</td>
</tr>
<tr>
<td>INTDOM</td>
<td>94.227</td>
<td>20.001</td>
</tr>
<tr>
<td>SPYRS</td>
<td>3.447</td>
<td>1.696</td>
</tr>
<tr>
<td>SPGPA</td>
<td>3.448</td>
<td>.478</td>
</tr>
<tr>
<td>GPA</td>
<td>2.970</td>
<td>.436</td>
</tr>
</tbody>
</table>

Dashes in Table 1 indicate that the variable was not entered into the equation due to its high non-significant relationship as revealed by a Pearson Product Moment correlational analysis.
Table 1 contains the results of the analysis once the control variables were eliminated. It is important to note that none of the independent variables could effectively predict the students’ level of pronunciation accuracy for Section I of the test: the word repetition exercise. Given the nature of the exercise, one possible explanation for the non-significant results could be that the subjects participating in the experiment have a “similar ability” to imitate Spanish words after a native model. For example, the subjects had to repeat the word ‘cada’ (Section I, word three) after the native model. The non-fricative continuant ‘d’, to the American ear, sounds similar to the ‘th’ in the English word ‘they’. The subjects, hearing the native speaker utterance as “ka-də”, correctly reproduce the Spanish equivalent of the voiced postdental non-fricative continuant.

The same rationale could also apply to the Spanish intervocalic ‘r’, which is similar to the American English flap ‘t’ or flap ‘d’ in words such as ‘butter’, ‘muddy’, ‘city’, and ‘better’. The subjects’ perception of the flap ‘t’ in the Spanish word ‘pero’ insures a close approximation of the Spanish flap ‘r’ and, consequently, higher scores result.

In these cases, positive transfer from the English phonological system apparently facilitates the students’ pronunciation of isolated words in the target language. Since correct performance on Section I relied most heavily on the students’ ability to perceive, to remember, and to mimic the native utterance, it is possible that this section measured one of the following: 1) the subjects’ ability to imitate as opposed to their actual ability to produce the target language sound system, or 2) their ability to relate the allophone to similar sounds in their native language. Thus, the similarities between the Spanish allophone and the English equivalent made it easier to reproduce the target language sound. Since the allophonic distribution of the native language closely resembles some items tested, the subjects’ differences in pronunciation ability for some items were nullified due to positive transfer.

The most significant predictor of pronunciation accuracy for the remaining sections of the pronunciation pretest was subject attitude. That is to say, the more a speaker was concerned about acquiring proper pronunciation in Spanish, the more accurate was his/her pronunciation on the test. The scores on the Likert questionnaire had the most power to predict the subjects’ performance on Section II, followed by Section III, and finally, Section IV. The Likert questionnaire was also significant in predicting pronunciation accuracy on the entire test as well.

The second most significant predictor of pronunciation accuracy was the subjects’ degree of FI. That is to say, individuals who were more field independent tended to have better pronunciation: 1) when repeating entire sentences after a native speaker model (Section II), 2) when reading a list of words in isolation (Section III), and 3) when spontaneously speaking the target language (Section IV). It is interesting to note that the more controlled pronunciation exercises (Sections II and III), invoked a field independent style for successful pronunciation. However, when subject attention was focused on communicating “meaning” over pronunciation, as in Section IV of the test, field independence and right cerebral dominance were important factors in
determining correct pronunciation. Apparently, the holistic design of Section IV of the pronunciation test required individuals to exercise both field independent and right cerebral dominant tendencies for correct pronunciation to occur. This finding should lead researchers to reexamine their belief that field independence/dependence and left/right cerebral dominance are highly parallel constructs. If field independence/dependence were really correlated with cerebral lateralization to any substantial degree, it is surprising that indications of this were not revealed in this study. Correlational coefficients between the GEFT and the HIPS were very low and non-significant: GEFT with LT: $r = -.1832, p = .141$; GEFT with INT: $r = .0662, p = .598$; and GEFT with RT: $r = -.0343, p = .785$.

Although the low correlations do not provide iron-clad evidence against the relationship between field independence/dependence and lateral cerebral dominance, the results of the present study do not support such a claim. More empirical research would be needed to maintain such a relationship.

The third most significant predictor of pronunciation accuracy was the subjects’ degree of right cerebral dominance. This suggests that individuals who had a greater degree of right hemispheric dominance had better pronunciation on the free-elicitation exercise (Section IV) of the pronunciation test. This finding supports Leaver’s (1986) speculation that right-cerebrally-dominant individuals will excel in their pronunciation of the target language; however, this appears to be true only when the subjects are spontaneously producing the target language as opposed to their performance on simple repetition exercises or when reading words in isolation.

Oxford (1989) provides further insights into Leaver’s assumption in her discussion of Willing (1988), who states that the “left hemisphere of the brain deals with language through analysis and abstraction, while the right hemisphere recognizes language as more global auditory or visual patterns” (14). Presumably, while the left hemisphere analyzes the structural make-up of the language (i.e., morphology, syntax, grammar, and possibly the articulation of discrete words, as suggested by the present analysis), it is the right hemisphere that analyzes the way the language sounds — its overall tonal patterns and rhythmic qualities.

7. The effect of formal instruction in pronunciation

The second multiple regression analysis examined the role of formal phonetic instruction in the acquisition of a non-native phonological system. This analysis focused on each group independently consisting of a control group and two experimental sections. The independent variables chosen for this analysis were DUMMY 1 and DUMMY 2, which control for the effect of the treatment that was given to the subjects in the experimental sections. The subjects’ scores for attitude, field independence, and degree of left, right and integrative dominance were included in the present analysis.
7.1 Formal instruction in pronunciation

Subjects in the experimental sections were provided with formal instruction in Spanish pronunciation. For ten minutes of each class period, the experimental group subjects received instructions regarding point, place, and manner of articulation. Each session began by having the subjects repeat a word which contained the allophone to be studied. The subjects described the articulation of the allophone without using linguistic terminology while the instructor wrote their analysis on the board for later comparison with a facial diagram. The methodology was designed in such a way as to provide the students not only with an aural representation of the allophone but a verbal description, which they provided, and a visual diagram as well, thus further reinforcing the learning process.

The second segment of the pronunciation treatment consisted of practice exercises: word/sentence repetition, rhymes, and tongue twisters. The exercises were completed in groups of two or three students, but at times were done chorally. Immediate feedback was given either by fellow classmates or by the instructor.

Table 2. Class means and gainscores for sections I-IV on the pronunciation tests

<table>
<thead>
<tr>
<th>Section</th>
<th>Post-Test</th>
<th>Pretest</th>
<th>Gainscore</th>
<th>R2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section I</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>exp. group 1</td>
<td>56.74</td>
<td>55.72</td>
<td>1.02 *</td>
<td></td>
</tr>
<tr>
<td>exp. group 2</td>
<td>54.81</td>
<td>51.16</td>
<td>3.65 ***</td>
<td>.218 ***</td>
</tr>
<tr>
<td>control group</td>
<td>53.07</td>
<td>55.10</td>
<td>-2.03 *</td>
<td></td>
</tr>
<tr>
<td>Section II</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>exp. group 1</td>
<td>60.31</td>
<td>59.71</td>
<td>.60 NS</td>
<td></td>
</tr>
<tr>
<td>exp. group 2</td>
<td>59.19</td>
<td>52.13</td>
<td>7.06 ***</td>
<td>.358 ***</td>
</tr>
<tr>
<td>control group</td>
<td>52.57</td>
<td>53.39</td>
<td>-.82 NS</td>
<td></td>
</tr>
<tr>
<td>Section III</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>exp. group 1</td>
<td>69.72</td>
<td>65.42</td>
<td>4.30 *</td>
<td></td>
</tr>
<tr>
<td>exp. group 2</td>
<td>68.38</td>
<td>59.84</td>
<td>8.54 ***</td>
<td>.273 ***</td>
</tr>
<tr>
<td>control group</td>
<td>62.28</td>
<td>62.40</td>
<td>-.12 NS</td>
<td></td>
</tr>
<tr>
<td>Section IV</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>exp. group 1</td>
<td>1.84</td>
<td>2.19</td>
<td>-.35 NS</td>
<td></td>
</tr>
<tr>
<td>exp. group 2</td>
<td>2.00</td>
<td>1.50</td>
<td>.50 ***</td>
<td>.273 ***</td>
</tr>
<tr>
<td>control group</td>
<td>1.42</td>
<td>1.52</td>
<td>-.10 NS</td>
<td></td>
</tr>
<tr>
<td>Total gain</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>exp. group 1</td>
<td>188.62</td>
<td>183.05</td>
<td>5.57 *</td>
<td></td>
</tr>
<tr>
<td>exp. group 2</td>
<td>184.39</td>
<td>164.65</td>
<td>19.74 ***</td>
<td>.409 ***</td>
</tr>
<tr>
<td>control group</td>
<td>169.36</td>
<td>172.43</td>
<td>-3.07 NS</td>
<td></td>
</tr>
</tbody>
</table>

* p < .05       ** p < .01    *** p < .001
The pronunciation accuracy analysis (Multiple Regression Analysis #1) suggested that factors such as field independence and right hemispheric dominance in free elicitation tasks relate to the subjects’ pronunciation accuracy. Table 2 assesses the effect of formal instruction on pronunciation. The table lists a summary of the mean raw scores received by each group on each section of the pronunciation pre and posttest. A measure of improvement, or a gainscore, was calculated by subtracting the pretest scores from the corresponding posttest scores. Positive results indicate improvement in pronunciation and negative results indicate a decline. The final column reports the R-squared values obtained from the multiple regression analysis along with the corresponding probability levels.

Of importance to note is the control group’s decline in pronunciation on all four sections of the pronunciation test. Only on Section I, however, was the loss statistically significant. It appears that the absence of instruction was related to a decline in pronunciation ability by the end of the semester.

Experimental group 2 (EG$_2$) experienced the most improvement during the semester. The subjects in this section received the lowest scores on the pronunciation pretest but had the highest gains by the end of the semester. The wide margin of difference in scores between EG$_1$ and EG$_2$ (18.5 points for the entire test) evident at the beginning of the semester was no longer apparent when the posttest was administered. These findings support the claim that the pronunciation treatment related significantly to improvement in pronunciation.

Gainscores increased marginally for EG$_1$ achieving significance levels for Sections I, III, and for the entire test overall. It should be noted at this time that EG$_1$ received the highest scores on the pronunciation pretest. As a result, the total change possible for subjects in this section was not proportionally equal when compared to the subjects in EG$_2$ and the control group.

Of the variables included in the present analysis, only formal instruction successfully predicted improvement in pronunciation. Variables that could predict the subjects’ pronunciation accuracy at the beginning of the semester, such as LIKERT, FI, and RT-dominance, were not significant predictors of improvement in pronunciation for any group in the experiment. Once again, this suggests that formal instruction in pronunciation relates to significant improvement in pronunciation.

8. Metalinguistic awareness and production

The final question posed in this study was whether the subjects’ knowledge of the target language sound system, termed metalinguistic awareness, related to better pronunciation or production on the posttest.

The third multiple regression analysis consisted of subjects from the experimental sections (n=40). Subjects from the control section were eliminated since they had not received any formal instruction in pronunciation.

The independent variables consisted of scores the subjects received on a pronunciation description exercise that was administered one week after the
pronunciation treatment had concluded, and just prior to the administration of the pronunciation posttest. The subjects in the experimental sections were required to describe the articulation of specific underlined sounds studied during the semester.

The dependent variables for this analysis were the scores the subjects received for their articulation of the same sounds on the pronunciation posttest. It was believed that individuals who could successfully describe the target language sounds would correctly produce the same sounds on the pronunciation posttest.

Table 3 contains the results of this analysis. The coefficients show that the ability to describe the articulation of the target language allophones related significantly to the pronunciation of these sounds on the posttest. The r values ranged from .37 to .49 with probability levels well below the .05 level.

Although more empirical research is needed in this area, this portion of the study provides an indication that metalinguistic awareness is related to better production. By teaching our students the proper articulation of the target language allophones, we increase their chances for mastering the second language sound system. Of importance to note, however, is that correlation is not causation; a more in-depth analysis of the present data is needed to reveal tendencies as to which comes first — the ability to describe the target language sound system, or the ability to produce those sounds.

Table 3. Linear regression analysis of production as a function of metalinguistic awareness. Only those sounds which were tested on the sound description assignment and the pronunciation posttest are included in the analysis. N = 40*

<table>
<thead>
<tr>
<th>Dependent Variable:</th>
<th>r</th>
<th>F-ratio</th>
<th>Sig. F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section I</td>
<td>.3743</td>
<td>5.61817</td>
<td>.0230</td>
</tr>
<tr>
<td>Section II</td>
<td>.4926</td>
<td>5.14265</td>
<td>.0291</td>
</tr>
<tr>
<td>Section III</td>
<td>.4866</td>
<td>4.62080</td>
<td>.0380</td>
</tr>
</tbody>
</table>

* The control group was eliminated from this analysis

9. Conclusions

This article has presented research suggesting that both biological and pedagogical variables play a significant role in the acquisition of a non-native phonological system. Although the subjects’ beginning of the semester pronunciation accuracy of the target language was effectively predicted by their degree of field independence and right cerebral dominance, teaching proved to have a positive effect regardless of these innate differences. Another notable finding was the relationship between the subjects’ attitude and pronunciation, suggesting that students who were more concerned about their pronunciation of the target language tended to have better mastery over the L2 phonological system.

These findings have certain research and educational implications. First, it has been demonstrated that explicit instruction in pronunciation increased
the rate of phonological acquisition by subjects in the experimental sections over and above the rate of acquisition experienced by subjects in the control group. This finding leads one to reexamine the validity of Krashen’s (1982) assertion that formal instruction is neither necessary nor sufficient for “acquisition” to occur. It appears that during the process of formal instruction in pronunciation, the learner becomes sensitized to the acoustic-phonetic make-up of the target language. This newly acquired “metalinguistic sensitivity” enables the learner to monitor all “phonetic” input encountered, thus initiating a process of evaluation, reevaluation, and finally, a restructuring of his or her own interlanguage phonological output as needed. I do not argue that formal learning of pronunciation is superior to our ultimate goal of acquisition; I do believe, however, that this is an instance in which learning unequivocally aids and promotes the acquisition process.

Second, as more research is carried out in the field of second language acquisition, it becomes increasingly clear that learning styles and strategies employed by our students are as varied as are the students themselves. Consequently, it is important for educators to recognize individual differences by implementing methodologies that appeal to every student’s learning preference, whatever that might be. By varying our mode of pronunciation instruction in the classroom (i.e., presenting the material aurally, orally, visually), we provide a type of instruction that was favorable to every student’s learning preference.

In conclusion, I would propose that language teachers and course coordinators adopt methodologies that emphasize the acquisition of proper pronunciation not only in beginning courses but at the intermediate level as well. Focusing more on pronunciation serves to raise our students’ awareness of the target language sound system. Only when students learn to listen critically to the rhythmic, tonal, and articulatory features of the language can improvement be realized. Such a revised methodology is an efficient and effective means of contributing to the linguistic success of our learners. Our goals should include not only making our learners more proficient in grammar, vocabulary, and syntax, but in the acquisition of pronunciation as well.

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References

Brown, H. Douglas

Chapelle, Carol and Cheryl Roberts
1984 “Ambiguity tolerance and field independence as predictors of proficiency in English as a second language.” Language Learning 36.7-45.

Chastain, Kenneth

de Bot, Kees

de Bot, Kees and K. Maillert

Dulay, Heidi, Marina Burt and Stephen Krashen

Gilbert, Judy B

Guiora, Alexander, Harlana Lane and Lewis Bosworth

Hansen, Jacqueline and Charles Stansfield

Krashen, Stephen

Krashen, Stephen, Herbert Seliger and Dayle Hartnett

Laeufer, Christiane
1989 “Theoretical and pedagogical implications of recent research on phonetic/phonological interference in adult foreign language acquisition.” Unpublished ms.

Leaver, Betty Lou

Lenneberg, Eric

Murakawa, H.

Naimen, N., Maria Frohlich, David Stern and A. Todesco

Neufeld, Gerald and Eta Schneuderman

Oxford, Rebecca

Pennington, Martha C. and Jack C. Richards

Scovel, Tom

Seliger, Harry, Stephen Krashen and Peter Ladefoged

Selinker, Larry

Stansfield, Carolyn and Jacqueline Hansen

Suter, Richard W.

Taggart, William and E. Paul Torrance

Tarone, Elaine E.

Walsh, Terrence and Karl C. Diller

Appendix

PRONUNCIATION PRE AND POSTTEST
S200 SPEAKING PORTION: SECTIONS 1-4

GENERAL INFORMATION:

This is a test to measure your speaking ability. The following test consists of four (4) sections. Each section will be tape-recorded. Please listen to the instructions carefully. If you have any questions do not hesitate to ask.

IMPORTANT: Before you begin, please write your social security number on SIDE A of the cassette tape. You will also be instructed to record your social security number on the tape. This number will be used only for matching purposes. Your name will not be identified with the number. This test is anonymous. Please wait for the test administrator to give you further instructions.

====================================================================

SECTION I

WORD REPETITION: For this exercise you will hear 13 words. Please repeat each word you hear after the model. The test administrator will tell you when to begin.

====================================================================

SECTION II

SENTENCE REPETITION: This exercise consists of 10 sentences you see below. Please repeat each sentence after the model. Before the exercise begins, quickly read each sentence to yourself. After you have read each sentence look up at the test administrator. The test administrator will tell you when to begin.

1. Su papá conduce por la carretera.
2. Los italianos beben vino cada día.
3. Susana me lo dijo pero no recuerdo.
4. Yo mismo vi al presidente.
5. Roberto tiene veintiún años.
6. ¿Cómo se llama esa chica?
7. Quiero que Juan lo haga ahora.
8. No me gusta la camisa que lleva.
9. Ganamos el premio gordo.
10. Vivimos aquí desde hace treinta años.
SECTION III

INSTRUCTIONS: Please read the following words aloud in the order given. Do not state the item number but try to leave a brief pause between each one. If you make a mistake, you may read the word again. Once you have finished, please look up at the test administrator.

1. carretera   10. libre
2. pero   11. facha
3. mismo   12. equipaje
4. puerta   13. un perro
5. razón   14. bebemos
6. gente   15. caballo
7. dedo   16. trabajo
8. hago   17. estos
9. niñito   18. hispánico

SECTION IV

INSTRUCTIONS: In this section, choose the picture you like best and describe what is happening in Spanish. Each picture contains a familiar setting: a classroom, and a party. For this exercise you may want to give the characters ficticious names and make up events. Once the exercise begins, do not stop speaking until you are told to do so.

Once you have chosen the picture, look up at the test administrator. You will be told when to begin.
Attitude Inventory for the Acquisition of Pronunciation Skills in Spanish as a Second Language

Please answer all items using the following response categories:

5 = Always or almost always true of me
4 = Usually true of me
3 = Somewhat true of me
2 = Usually not true of me
1 = Never or almost never true of me

_____ 1. I’d like to sound as native as possible when speaking Spanish.
_____ 2. Acquiring the proper pronunciation skills and abilities in Spanish is the least of my worries.
_____ 3. I frequently practice repeating Spanish words at home on my own in order to better my pronunciation skills.
_____ 4. I will never be able to speak Spanish with a good accent.
_____ 5. It’s more important to communicate rather than worry about proper pronunciation.
_____ 6. When my professor gives hints on how to better my pronunciation skills I try to put them to good use.
_____ 7. I believe I can improve my pronunciation skills in Spanish.
_____ 8. I believe more emphasis should be given to proper pronunciation.
_____ 9. One of my personal goals is to acquire proper pronunciation skills and preferably to be able to pass as a near-native speaker of the language.
_____ 10. I like reading aloud in Spanish to practice pronunciation.
_____ 11. When I listen to tapes in the language lab, I really concentrate on the speakers’ accents.
_____ 12. I try to imitate Spanish speakers as much as possible.
_____ 13. Communicating is much more important than sounding like a native speaker of Spanish.
_____ 14. I have a fairly good idea which sounds I cannot produce in Spanish, but I rarely do anything to improve.
_____ 15. Good pronunciation skills in Spanish are not as important as learning vocabulary and grammar.
_____ 16. When I practice new Spanish I concentrate on my accent.
_____ 17. I try to find out how to improve my accent when speaking Spanish.
_____ 18. I’m concerned with my progress in my oral production of Spanish.
_____ 19. If I knew a native speaker of Spanish, I would probably ask him/her to say some words so I could try to copy the accent.
_____ 20. Sounding like a native speaker is very important to me.