Pronunciation and intelligibility of Hispanic learners of English

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1 Introduction

Teaching pronunciation is a difficult enterprise, especially when we are dealing with adult learners of L2. According to Michael Long (1990), children lose their vocal tract flexibility at the age of six. After that age, nearly all speakers have a fixed phonemic inventory with a rigid set of phonological rules that will characterize their speech, and most probably will betray them as nonnatives whenever they try to speak any foreign language. Rigidity, however, doesn't mean that nothing can be made to help adult L2 learners improve their pronunciation so that they are more easily understood, and are not stereotyped as bad speakers of L2.

We may wonder why we should lose our time with pronunciation when there are many other aspects such as grammar and vocabulary that require our attention more urgently. The answer should be found in the fact that pronunciation is essential for intelligibility. We need to pronounce well if we want to be understood, especially when we are maintaining a long conversation. We can understand a few isolated words with relative facility even if they are spoken with the most incredibly rare pronunciation, but to keep listening and speaking to a person that doesn’t share the phonetic and phonological conventions of the community, may be absolutely tiring and distressing, and may eventually end up in a communication breakdown. Pronunciation is the core of face-to-face interaction. Giles and his associates (Giles & Powesland, 1975; Giles & St Clair, 1979) established the importance of ‘speech style’ for the social evaluation of people. Their findings confirmed that we cannot disregard pronunciation, or consider it a superfluous area in the complex process of learning a new language, since it is very often a significant individual identity marker.

1.1 The Hispanic community: a particular case of ESL speakers

Spanish is the second most common language spoken in the US, and newly arrived populations from Spanish speaking countries constitute a very rich environment for research on two areas: how they maintain their original language, and how they acquire English as a second language.

- a)Languages maintenance and language shift is a very productive field of research, which has shown that different L1 communities tend to be more ‘loyal’ to their language than others, and most researchers have tried to answer the question of why some minority groups keep their language while others abandon it. According to
Grosjean (1982: 107), the factors that primarily explain the maintenance of Spanish in the US are: 1) the continual two-way flow of people between Latin America, and the Hispanic communities in the United States; 2) the degree of emotional attachment to the language; 3) the geographic concentration of Mexican Americans in Los Angeles and San Antonio, of Cubans in Miami, and of Puerto Ricans in New York.

- b) Second language acquisition has been studied from different perspectives, and different theories have been proposed to explain the process of acquiring a language other than L1. It is clear that one very influential proposal has been arguing that the process of learning L2 is identical to the process of learning L1 (Krashen: 1985). Yet, it seems quite clear that circumstances surrounding the acquisition of L1 and L2 are different, and the fact that, when learning L2, L1 is already in the learner’s brain, cannot be ignored. L1 acquisition coincides with the development of other cognitive processes and with the mental and physical maturing of the child. L2 acquisition generally occurs at a later stage, when L1 acquisition and other processes are complete. Except for cases where children are raised in coordinate bilingual settings, and are exposed to both languages when they are still very young, the second language is acquired later, so that the learner does not have to start the process all over, and the knowledge he/she already has at that moment contributes to the task of learning. However, we must note that this strategy is also responsible for the many cases of negative language transfer from L1 to L2 that occur in adult learners of a foreign language.

1.2 Pronunciation problems of Spanish ESL speakers

Spanish speakers share certain regular problems in learning the pronunciation of English. The process of learning involves switching from a relatively simple vowel system, with only five vowels, to the much more complex English system, with twelve vowels, some of them centralized, plus all the possible glides. In addition to that, the concept of length will add confusion to the Spanish speakers, since this is not distinctive in their L1, as it is in English. Finally, consonants constitute another hard problem for those learners. We can group the problematic consonant phones in various ways. Firstly, there are some that do not exist at all in standard Spanish, such as the voiced palato-alveolar fricative /l/, and the voiceless glottal fricative /h/. Secondly, there are consonant sounds that do exist in Spanish, but as allophonic variations, such as the voiced alveolar fricative /z/ and the voiced palato-alveolar affricate /d/ /j/. Thirdly, there are sounds that exist in Spanish as allophonic variations, appearing in intervocalic positions, that do not exist in English at all, such as the voiced bilabial fricative /B/ and the voiced velar fricative [g]. Generally speaking, the difficulties regarding allophonic variations are the most problematic in the sense that most speakers are unaware of them. Such is the influence of spelling that a Spanish speaker finds it difficult to accept that a word like ‘dedo’ contains two different consonantal sounds, in the same manner as an English speaker can’t distinguish the voiced alveolar roll /r/ from the voiced alveolar tap /l/ as in ‘carro’ and ‘caro’. This will naturally make it more difficult for those speakers to learn to appreciate the difference.

1.3 Previous studies on Intelligibility

During the last fifteen years, linguists have become interested in the notion of intelligibility of nonnative speakers, and have tried to establish what linguistic errors are regarded as more unintelligible and more disturbing by native speakers. In one of those studies, Hinofotis and Bailey (1981) presented undergraduate students at UCLA with videotaped speech samples of International Teaching Assistants (ITAs) in a role-play situation before and after instruction in oral communication, and asked them to decide on their most problematic communication areas. The results indicated that the most frequently cited problem was about the subjects’ explanations being boring. The researchers attributed those results to the speakers’ nonnative intonation patterns, and they concluded that pronunciation was the single most important factor in the evaluation of the ITAs’ performances. That claim was confirmed by pronunciation being ranked first on a questionnaire where twelve subcategories of performance had to be ordered from most important to least important. Grammar was ranked seventh, and vocabulary was relegated to the eighth position.
Other studies have investigated the relation of pronunciation, grammar, and comprehensibility. Varonis and Gass (1982) found that those three factors were interrelated, in such a way that both grammar and pronunciation affected comprehension, and by the same token, comprehensibility affected how pronunciation was judged by native speakers.

Fayer and Kraisinski (1987) conducted a study in Puerto Rico among Spanish-speaking students of English. They focused on irritation and intelligibility, and on what linguistic features affected the latter. The researchers recorded samples from seven different speakers, and these were played to two groups of listeners: 88 Puerto Rican university students, and 40 native English speakers who had been living in Puerto Rico for less than a year. Listeners had to rate from 1 to 5 the overall intelligibility of the speakers, and next they were played again the same tape and were asked to judge from 1 to 5 each speaker’s grammar, pronunciation, intonation, frequency of wrong words, voice quality and hesitations. They found that pronunciation and hesitation were the most distracting features, followed far behind by grammar. The authors pinpointed that 'while both Spanish and English respondents were equally distracted by certain features of the nonnative speech, they were not equally annoyed', English listeners being more tolerant than Spanish ones. This point was used to argue that in a language learning context, learners have to be aware that their speech may be judged differently by native and nonnative listeners, being nonnatives less tolerant than native speakers.

Anderson-Hsieh and Koehler (1988) looked at the effect of foreign accent and speaking rate on comprehension. 224 American students listened to a passage read by nonnative speakers of English and answered 6 multiple-choice questions about the contents of the passage. The researchers found that the faster the speaking rate, the lower the comprehension by native speakers. This was true for all speakers, both native and nonnative, but it was most visible in the case of nonnatives with a stronger accent. However, that effect on comprehensibility was found only between the regular and fast rate, and no differences appeared between the slow and regular rate for any speaker.

Schairer (1992), studied how native speakers of Spanish evaluated the comprehensibility of nonnative speech samples. The researcher’s aim was to find out what phonological errors produced by American English speakers most affected the comprehensibility of the whole utterance. The researcher recorded 18 English speakers reading from scripts containing blanks which they had filled in prior to making the recording. The speech samples were evaluated through a phonetic analysis by the investigator, and a native speaker evaluation of comprehensibility or incoherence of the recorded samples along a scale of one to six. The results indicated that native speaker evaluations of the speech samples were most strongly associated with two phonological factors: overall production of vowels; and consonant linkage. Speaking rate was not reported to be an outstanding feature.

### 2 The Study

This study mainly focuses on segmental phonology and it intends to examine to what extent L2 pronunciation errors of ESL speakers affect their intelligibility.

It is generally agreed that syntactic, morphological, and lexical errors are difficult to classify and systematize. Phonology gives us the possibility to isolate all possible occurrences in a definite context, and calculate the rate of accuracy of a speaker for a certain aspect (a particular segment, stress assignment, etc.). In this study, we will look at the correspondence between deviations from the norm in the production of certain phonological segments, and the actual ratings on intelligibility given to 4 speakers by 28 English-speaking respondents. We will not discuss suprasegmental elements, which have also been reported to be significant in accounting for native reactions to nonnative speech (Anderson-Hsieh, Johnson, and Koehler, 1992), but we will look at speech rate -which Anderson-Hsieh & Koehler (1988), and Buller, et al. (1992) considered significant- in addition to the pronunciation of eight segments thought to be likely to cause problems to Spanish learners of English.

The idea for this research was taken after the study carried out by Schairer (1992), where 18 English speakers were recorded when reading a text in Spanish. The present study had a very similar design, although the target language was not Spanish but English. The aim was to establish a hierarchy of errors that could be used by ESL instructors in order to help Spanish speakers improve their oral skills, as
well as to compare these results to Schairer’s, and observe whether there was a similar ranking of error gravity in English and Spanish.

2.1 Hypothesis
The hypothesis predicted that although the hierarchy in English would not be exactly the same as in Spanish, there would be some agreement on the group of phonological features that could best account for comprehensibility in both languages. This prediction was based on the Contrastive Analysis assumption that similar segments in L1 and L2 produce little trouble for the learner and, logically, for the listener, whereas divergent segments are responsible for greater difficulties in second language acquisition.

2.2 Method
The present study was carried out in an artificial setting, where native speakers evaluated nonnatives’ intelligibility with no possible interaction between speaker and listener. This was done for methodological reasons, in spite of Smith & Nelson’s (1985) argument that intelligibility is not speaker- or listener-centered, but is interactional between the two participants in the communication act. Although the validity of that statement is unquestionable, it was thought that controlling as many variables as possible was a reason good enough to override the implications derived from it.

2.2.1 Recording
Four Spanish-speaking graduate students at SUNY-Stony Brook (New York) were recorded while reading a 100-word English passage. The four speakers were female, aged between 20 and 30, and they were selected as representing different countries of Latin America, and different degrees of proficiency in English. One speaker was from Colombia, another from Cuba, the third was from Honduras, though she had been living in the US since the age of seven, and the last one was from Argentina. The third speaker was almost native-like, though her English had some remnants of her native language phonology; the second speaker was in an intermediate stage of learning, and had a very strongly accented pronunciation; the other two were highly advanced speakers, with the single difference of Speaker 4 having a slightly stronger accent than Speaker 1. Eventually, results of Speaker 2 were not considered for analysis because her recording was fraught with interferences such as omissions, pauses, and marks of insecurity. Since those interferences would have probably altered and biased the global results, it was thought convenient to sacrifice speaker 2’s data for the sake of reliability.

2.2.2 Evaluation
Twenty-eight American undergraduate students at the same university evaluated the taped samples for intelligibility in accordance to the following question:

(1) "Do you think the person speaking is intelligible?"

not very very 1 2 3 4 5

They were also asked about the speakers’ first language, and they had to decide whether their speech rate was either fast, regular or slow.

2.2.3 Analysis
The researcher, with the help of a native trained phonetician, selected seven phonological properties for analysis. These were:

1 - vowels in unstressed position.
2 - vowels in stressed position.
3 - the consonants /pl/, /l/ /k/.
4 - the consonants /bl/, /l/ /gl/.
5 - word-final consonant followed by word-initial vowels.
6 - the consonant /l/.
7 - speaking rate (measured in terms of syllables per second).

Stressed and unstressed vowels were treated separately because of the different treatment they receive in English and in Spanish. Vowels in unstressed position had to be reduced to /l/, and vowels in stressed position had to be accepted as native-like by a trained phonetician, in order to be considered error-free. /pl/, /l/, /k/ had to be aspirated where it was necessary, and /l/ had to be alveolar and realized as a flap when following a stressed syllable. Other realizations that were considered nonnative were spirantized voiced stops [b], [d], [g], linking of a word-final consonant with a word-initial vowel - instead of keeping them separate as most English speakers do, and substitution of /l/ for [b] or [l]. Speaking rate ranged between 2.84 and 4.46 syllables per second, and the distribution of the speakers on a speed scale fairly
corresponded to the listeners’ ratings of the speech as: fast, regular or slow. This may seem too obvious, but it is important to acknowledge the fact that we can rely on the listeners’ ability to discriminate among different rates, especially because some other aspects such as recognition of first language accents are not easy for untrained listeners.

2.3 Results and discussion

The scores for comprehensibility elicited from the respondents are presented in Table I. Table II illustrates the result of dividing the actual number of errors of the same particular phonological feature by the total number of occurrences of that feature. Table III shows each speaker’s speaking rate in terms of syllables per second. All those figures were correlated in order to find those errors that could best account for the lack of intelligibility of nonnative speech. Those correlations appear in Table IV.

Table I: Intelligibility Scores
Sp 1
Average: 3.852
Sp 3
Average: 3.185
Sp 4
Average: 3.259

Table II: Frequency of phonological errors
Stressed
Unstressed.
/p, /t, /k/
/b, /d, /g/
Cons#V
/s/
vowels
vowels
Sp 1 1 0.4 0.6 1.5 0.4 0.5
Sp 3 0.6 0.1 0.9 2.3 0 1.7
Sp 4 1.3 0.1 1.5 1.5 1.3 0.5

Table III: Speaking Rate
syl/min
Sp 1 3.93
Sp 3 4.46
Sp 4 4.46

Table IV: Correlation Matrix obtained by comparing each speaker’s average score for Intelligibility, to ratio of errors and speaking rate.

<table>
<thead>
<tr>
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<th>Intelligibility</th>
<th>Intelligibility</th>
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<tbody>
<tr>
<td></td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>Stressed Vowels</td>
<td>0.183</td>
<td></td>
</tr>
<tr>
<td>Unstressed Vowels</td>
<td>0.995</td>
<td></td>
</tr>
<tr>
<td>/p, /t, /k/</td>
<td>-0.686</td>
<td></td>
</tr>
<tr>
<td>/b, /d, /g/</td>
<td>-0.585</td>
<td></td>
</tr>
<tr>
<td>Cons. # Vowel</td>
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<td></td>
</tr>
<tr>
<td>/s/</td>
<td>0.585</td>
<td></td>
</tr>
<tr>
<td>Speaking Rate</td>
<td>-0.995</td>
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Table IV has to be interpreted by considering only the negative correlations, since these inform us of the negative influence of a particular type of error in the overall intelligibility of that speaker. Results indicate that speaking rate has the highest correlation with judgments of intelligibility, followed by accuracy of pronunciation of /p, /t, /k, and /b, /d, /g/. This is not surprising at all, after Anderson-Hsieh and Koehler (1988) found that higher speed made nonnative speech less intelligible. With regard to both, voiced and voiceless stops, a look at the characteristics of the two languages involved in this study may bring some explanations for the correlations mentioned above. The consonants /b, /d, /g/ seem to be phonetically close enough in the two languages as not to interfere with intelligibility. However, it is possible that the realization of /l/ and /d/ as [l] and [d] by Spanish speakers creates confusion with the English phonemes /l/ and /d/. It must be noted, though, that the number of total occurrences of /b, /d, /g/ was only thirteen, which in statistics is a very small number.

We mentioned above that one of the purposes of this study was to compare its results with those obtained by Schairer (1992). That is, to see whether the phonetic properties that most hinder intelligibility of Hispanic speakers of English are the same that most hinder intelligibility of American English speakers of Spanish. The results show that this is not the case, and both languages, or both linguistic communities, seem to rely on different factors to assess intelligibility. Thus, Schairer found that speaking rate did not affect intelligibility, whereas our study demonstrates that it is the most important single factor, followed by
In addition, Schairer’s most influential properties are: stressed and unstressed vowels, followed by consonant-linkage. Consequently, none of the three best correlated elements in both studies are coincident. This evidence allows us to claim that language learning is not symmetric. That is, the difficulties that speakers of language X may experience in being understood by speakers of language Y will be different from those experienced by speakers of language Y practising language X. This is a logical conclusion, for the same phonemes have different significance in different languages, and the way they contrast and combine with the other phonemes will determine their relevance in the mind of native speakers.

3 ▶ Conclusions

Due to the limitations of the present study, strong claims cannot be made. Yet, some pedagogical implications may be derived from this experiment. First, nonnative speakers should get rid of the idea that speaking fast makes them sound more native. The truth is that, except for some exceptional cases, nonnatives are always perceived as such. Consequently, it is worth concentrating on producing perfectly intelligible clear speech, although that may involve speaking at a slower rate than natives. It still remains to be seen what the best way of teaching the production of certain segments to learners of ESL would be. One possibility is to teach some basic phonetics to the learners: for example the International Phonetic Alphabet, and the rules of allophonic variation in English, since allophones are responsible for most of the errors made by non-natives. This theoretical teaching should be combined with the practice of activities which are integrated into the normal flow of the class, instead of being presented as completely separate units. Thus, pronunciation will be seen as an essential part of language by the learner.

Further research should focus on how to deal with those phonological features that most highly affect intelligibility in a specific language, and on what procedures are most effective to acquire them. These concepts will have to be clear prior to devising any method or material aimed at the teaching of pronunciation.

4 ▶ Bibliography


