

Fossilized pronunciation and the rhythm of English

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Abstract

Fossilization of errors in the pronunciation patterns of adult second language learners has been attributed to neuro-physiological factors, affective factors and psychological and developmental factors. However, little evidence has been found to support these arguments. Errors in the rhythm system of seven experienced non-native teachers of English with a Spanish background seem to give support to phonological fossilization due to inadequate learning situations. The most outstanding error, shared by all subjects analyzed, had to do with the rhythm system of the language, especially with syllable duration; this phonological aspect is not dealt with systematically in pronunciation courses and is not easily overcome without proper instruction. This paper addresses differences between the rhythm of English and Spanish, especially those that seemed to induce most of the errors found in the pronunciation patterns of the subjects analyzed in our data. At the same time, it specifies the conditions which seem to elicit correct rhythmic patterns and circumstances in which errors occur with more frequency.

Key words: English, Spanish, rhythm, fossilization, teaching.

La fosilización de la pronunciación y el ritmo del inglés

Resumen

La fosilización de errores en la pronunciación de estudiantes adultos de una segunda lengua ha sido atribuido a factores neuro-fisiológicos, afectivos, psicológicos y de desarrollo. Sin embargo, se ha encontrado escasa evidencia para apoyar estos argumentos. Los errores en el sistema de ritmo de siete profesores con experiencia no nativos con antecedentes hispánicos parecen apoyar la fosilización fonológica debida a situaciones inadecuadas de aprendizaje. El error más resalante, compartido por todos los informantes analizados, estaba relacionado con el sistema rítmico de la lengua, especialmente con la duración silábica; este aspecto fonológico no es tratado sistemáticamente en los cursos de pronunciación y no es fácilmente superable sin instrucción adecuada. Este trabajo analiza las diferencias entre el ritmo del inglés y el del español, especialmente aquellas que parecen inducir la mayoría de los errores detectados en los patrones de pronunciación de nuestros informantes. Al mismo tiempo especificamos las condiciones que parecen producir los patrones rítmicos correctos y las circunstancias de las cuales los errores ocurren con mayor frecuencia.

Palabras clave: inglés, español, ritmo, fosilización, enseñanza.

Introduction

One of the central issues in the study of second language acquisition has been that of phonological fossilization. Fossilization has been described as the process whereby both correct forms that conform to the target language norms and the so-called "errors" become relatively permanently incorporated into the grammatical system of a second language learner (Selinker 1972; Vigil and Oller, 1976). The explanations given for the fossilization of errors in the pronunciation patterns of adult second language learners range from neurophysiological factor (Lenneberg, 1976; Scovel, 1969, Walsh and Diller, 1981) to affective factors (Guiora et al., 1972; Schumann, 1976, 1978; Thata et al., 1981) to psychological and developmental causes (Krashen 1977; Redmond, 1977, Rosansky, 1975; Werker and Logan 1985).

Little evidence has been found for the physiological sources of the problem, based principally on the "critical period" for second language acquisition (Flege, 1987; Snow and Hoefnagel-Höhle, 1978; Winitz, 1981). On the affective argument, which focuses mainly on the adults' lack of motivation to change their accent, it has been suggested (Lightbown and Spada, 1993) that care must be taken in giving too strong an interpretation to learner's motivation since research findings suggest a circular cause and effect relationship between motivation and success in second language learning. That is, the more one succeeds, the greater one's motivation; the greater one's motivation, the more one succeeds.

The psychological and developmental arguments for phonologically fossilization are based on two hypotheses: one supported mainly by Krashen (1977) which suggests that at the close of the so-called critical period for language acquisition, the adolescents begin to consciously construct abstract theories about the world, hence, they tend to *learn* a second language and consciously apply abstract rules of grammar and pronunciation; this may inhibit "natural" language acquisition, including the acquisition of phonology. On the other hand, when the second language is *acquired*, the learner engages in meaningful interaction in much the same way that children pick up their first language- with no attention to form.

According to this approach, it is only acquired language which is readily available for natural, fluent communication. However, it has been found that formal instruction of language properties is related to subsequent acquisition of those properties (Elise, 1991; Fotos, 1994; Pienemann, 1989).

Another "psychological" hypothesis attempting to explain the fossilization of phonology in particular, is one based on language transfer and psychological habit formation. This hypothesis claims that a learner's speech perception and production could become permanently influenced by the first language phonology so that s/he becomes psychologically unable to perceive or produce a new phonology with any great facility. An experiment, carried out by Neufeld (1977), however, refutes such a hypothesis after 18 hours of carefully programmed instruction in only the phonetic aspects of a foreign language, Neufeld's subjects could imitate utterances in that language so accurately that they were judged to be native speakers. From the results of

this study Neufeld claims that failure to acquire L2 phonology could be based on inappropriate learning situations where the adult second language learner forms inaccurate acoustic images of the target language sound patterns. Once formed, those acoustic images are set and so are the learner's pronunciation patterns.

A more recent study by Champagne-Muzar, et al (1993) also relates pedagogical environment, the time devoted to phonetic instruction, and the available pedagogical materials to adult achievement in pronunciation. In their study, it is demonstrated that enhanced phonetic instruction results in improved discrimination and controlled production ability in adult learners of French and that such improvement can be affected within the context of a full second language curriculum. The one finding of this study that ran counter to the hypothesis was the treated group's failure to improve in their post-treatment discrimination of rhythmic contours; this failure was attributed to the nature of the rhythm discrimination tasks which was found difficult even for native speakers to carry out.

Error in the rhythm system of seven experienced non-native teachers of English with a Spanish background (NNTES) seem to give support to phonological fossilization due to inadequate learning situations. The most outstanding error, shared by all the subjects analyzed, had to do with the rhythm system of the language, especially, with syllable duration; this phonological aspect is not dealt with systematically in pronunciation courses and is not easily overcome without proper instruction. As discussed in previous papers (Chela, 1991,1993) failure in the instruction of the rhythm of English has been mainly due, on the one hand, to the difficulty of focusing on the length of stressed and unstressed syllables in the rhythmic pattern of the utterance and, on the other hand, to a lack of awareness of the true nature of the problems that rhythm system presents. Research has indicated that it is not the separation of stressed syllables by equal distances from each other that differentiates the rhythm of languages such as English and Spanish, for example, as the theory of stressed-timed languages and syllable-timed languages has claimed; the difference seems to lie mainly in the quantity and quality of the vowel sounds in both stressed and unstressed syllables and words (Adams and Munro, 1978; Anderson, 1993; Borzone and Signorini, 1983; Dauer, 1983; Fokes & Bond, 1989).

This paper addresses differences between the rhythm of English and Spanish, especially those that seemed to induce most of the errors found in the pronunciation patterns of the NNTES analyzed in our data. At the same time, it specifies the conditions which seem to elicit correct rhythmic patterns and circumstances in which errors occur with more frequency. The data was collected by asking the NNTES to read a 500-word passage and to speak spontaneously for fifteen to twenty minutes on a topic of their choice. Both activities were recorded without the presence of the author. The ages of the subjects ranged from 29 to 45 years old. They have all lived for at least one year in an English speaking country and they have taught English in Venezuela for a least five years.

1. The rhythm system: stress-timed and syllable-timed languages

Rhythm has traditionally been conceived as the way in which accented and unaccented syllables follow each other in the utterance. The theory of stress-timing and syllable-timing proposed by Pike (1945) differentiated languages such as English and Spanish. According to this theory, syllables are separated by equal distances from each other in English, irrespective of the presence or absence of unaccented syllables separating the accented ones. Thus, in the following examples

1. (a) Péte stayed tén dáys.
- (b) Líz, his síster, had to gô befóre.

the accented syllables are said to be separated from each by equal units of time. This means that although sentence 1 (b) above has nine syllables and 1(a) only four, both take about the same amount of time to pronounce because they both have four accented syllables each. The occurrence of rhythmic beats in Spanish, on the other hand, is not as regular as that in English, according to this theory. It is the syllables, either accented or unaccented which tend to occur at more or less regular intervals. In other words, the time taken to produce a Spanish utterance would be proportionate to the number of syllables it contains. Thus, the main differences between the two utterances in (2) would be the regularity of stress in the utterance in English and the lack of regularity in the utterance in Spanish:

2. (a) He's coming tomorrow afternoon.
(b) El viene mañana en la tarde.

Most methodologies for the teaching of English rhythm have been based on this theory (Faber, 1991); instruction, therefore, has consisted mainly in keeping stressed syllables equally spaced. Research in the rhythm of both English and Spanish, however, has shown this theory to be fallible since the tendency for stresses to recur regularly appears to be a language universal property (Roach, 1982; Dauer, 1983; Borzone and Signorini, 1983; Miller, 1984).

The tendency to equalize stresses in the utterance has been reported for English, especially in the formal speech of radio news readers, speakers at a conference, etc., (Brown 1977). Data obtained from Spanish spoken by Venezuelan radio news readers (Chela, 1994:64) show the same tendency. Extra stresses are given to polysyllabic words, in order to equalize the intervals within the wider limits in the utterances, as in the following samples:

3. *Hay una reunion esta tarde para los educadores.*
(there is a meeting this afternoon for the educators)
4. *...otorgan créditos a productores agrícolas.*
(they are giving credits to agricultural producers)
5. *...y gracias por sus declaraciones.*
(and thank you for your statements)

Chela, 1994:64)

In Spanish, polysyllabic words are stressed in just one syllable (e.g., *fundamental*, *declaraciones*, etc.) In English, on the other hand, polysyllabic word normally carry a primary and a secondary stress (e.g. *fundamental declaration*, etc.). Because of the occurrence of only one stress in Spanish, emphasis in polysyllabic words can be achieved by adding an extra stress to the word (e.g., *Jugaron un papel fundamental*). As seen above, in samples (3) to (5), this secondary stress is also given in Spanish to the polysyllabic words *educadores*, *productores* and *declaraciones*, in order to regularize the rhythm. In (3), for example, there are seven unstressed syllables in the interval between the stressed syllables *tar* and *do*: "*tard*e para los *educad*ores", while there are only two and four unstressed syllables in the interval between the other two stressed syllables in the utterance. In an informal situation the seven unstressed syllables could be spoken quickly in order to keep stresses regularly spaced. In a formal

situation, however, as in the case of this newscast, the speaker slows down the tempo, enunciates the sentence carefully and in order to regularize the rhythmic pattern, adds an extra stress to the first unstressed syllable in the polysyllabic word "educadores".

Since in English polysyllabic words normally carry two stresses, potentially long interstress intervals are broken up by moving the secondary stress to the first syllable; for example, the secondary stress in *Constantinople* is shifted in the sentence: *I'll follow him to Constantinople if necessary* (Dauer, 1983: 58). One of the two stresses in polysyllabic words could also be lost completely to break up very close sequences of stresses: *The Budapest climate's of a continental type. He lives in Budapest. The climate's continental*. Even words with just one stress as *sardine* could be stressed in either syllables according to the stress pattern that follows within the utterance: *The sardine sandwiches were delicious, but the tomatoes were all overripe. Overripe fruit gets squashed easily. I love sardines*. (Allen, 1970:191).

Grammatical words in Spanish could also be stressed in order to equalize the intervals within wide limits in the utterance, as in speech samples (6) to (8), taken from the same radio news readers as in samples (3) to (5):

6. ...y se prepara para **la** publicación
(and it is being prepared for publication)
7. ... será en la **nueva** sede de **la** biblioteca nacional
(it will be in the new headquarters of the national library)
8. ... pensando sobre **todo** en **las** necesidades del país
(thinking especially in the needs of the country)
(Chela, 1994:64)

In these cases, the articles *la* (6&7) and *las* (8) were chosen by the speakers to equalize the interstress intervals in the utterances instead of the unstressed syllables in the polysyllabic words. This same procedure is not possible in English; unstressed grammatical words cannot be accented in English in order to equalize the intervals within wide limits in an utterance, as it is done in Spanish. When interstress intervals consist only of grammatical words in English, these unstressed words are compressed as far as possible in order to allow the next stressed syllable to come on the regular beat. This can be observed in the following utterance read by an English radio news reader (Brown, 1977: 43):

9. The electricity **board** stated that they would be **obliged** to consider the **reintroduction** of **power** cuts

In the widest interval between stressed syllables in the utterance (i.e., **stated** that they would be **obliged**) there is a sequence of six unstressed syllables and words, four of which are grammatical words. In the analysis Brown did of the pronunciation of this utterance, she found that the news reader squashed the six syllables and words closely together in time so that they are heard as an acoustic blur. Grammatical words cannot be stressed in English to equalize interval within wide limits in the utterance, because sentence focus would also be given when it is not required, i.e., *The electricity board stated that **they** would be obliged... or The electricity board stated that they **would** be obliged..., etc.*

Grammatical words in Spanish are not only likely to be stressed to regularize the rhythm, as seen in samples (6-8), but some grammatical words, such as subject pronouns and auxiliaries, are always stressed in the utterance (Navarro Tomás, 1968). Some errors in the rhythm system of English found in the pronunciation patterns of the NNTES analyzed in our data seem to be due to interference of this native language rule:

10. The *author* of the *movie* **would be** doing this kind of narration, **you will** understand it *much more* when **you** read the novel.

Grammatical words can be stressed in interstress intervals in Spanish to regularize the rhythm because sentence focus is normally achieved through lexical and syntactical means. In English, sentence focus is normally achieved by shifting the tonic from the last stressed syllable, as shown in (11). Although words could also be highlighted phonetically in Spanish by shifting the tonic from the end (Canellada & Madsen, 1987), as shown in (12), this procedure is not as effective as it is in English.

11. (a) Peter lent me his **car**
 (b) Peter lent me **his** car
 (c) Peter lent **me** his car
 (d) **Peter** lent me his car.
12. (a) Pedro me prestó su **carro**.
 (b) Pedro me prestó **su** carro
 (c) Pedro **me** prestó su carro
 (d) **Pedro** me prestó su carro.

The reason for this difference seems to be that in English the tonic stands out not only by variation in pitch, which would also be possible in Spanish, the main phonetic feature that highlights the tonic in English seems to be syllable length (Fokes & Bond, 1989). Because of this difference in syllable length, grammatical words in English can easily stand out in the sentence, as with the words *his* and *me* in sentences 11 (b) and (c) above. The same effect is not obtained in Spanish in 12 (b) and (c), by shifting the tonic syllable within the sentence, because there is no significant difference in duration between stressed and unstressed syllables. Delattre (1966) found a ratio between them of 1.3:1 for Spanish, compared to 1.6.:1 for English. A more common procedure in Spanish to highlight words in the sentence is carried out by lexical and syntactical means, changing word order or by adding other words to the sentence. Thus, the sentences in (11) are better translated into Spanish by the sentences in 13:

13. (a) Pedro me prestó su carro.
 (b) Pedro me prestó el carro de él.
 (c) A mí me prestó Pedro su carro.
 (d) Fue Pedro el que me prestó su carro.

The use of vowel timing to signal sentence focus was not found in any of the pronunciation patterns of the NNTES analyzed in our data. Every syllable and word was stressed in order to highlight them, as in samples 14 (a),(b) and (c):

14. (a) (You should do it for everybody's sake),
not only for your own sake.
 (b) (She takes a look at the black woman)
in her own environment
 (c) **When he told me that), I was amazed.**

The error in samples (14) are not the result of a failure to separate stressed syllables by equal distances from each other as the theory of stressed-timed languages and syllable-timed languages has claimed, the errors are mainly caused by the inability to highlight just some syllables and words by means of syllable length, as in 15 (a),(b) and (c):

15. (a) (You should do it for everybody's sake), not **only**
 for your **own** sake.
 (b) (She takes a look at the black woman) in her
own environment.

- (c) (When he told me that), I was **amazed**
or **I** was **amazed**

Syllable length has been found to present the most significant phonetic differences between English and three other languages, French, Spanish and German (Delattre, 1966).

Difference in syllable duration was also found in a study carried out by Fokes and Bond (1989) in which stress patterns of non-native speakers productions (Japanese, Chinese Persian, Hausa and Spanish) were compared to those of native American English speakers. In this study, in which the spectral and durational characteristics of vowels in stressed and reduced syllables were examined none of the nonnative speakers produced words in which durational relationships were similar to the American pattern. The American productions clearly used the length of the vowel to signify syllable stress. This aspect of the rhythm system of English - vowel timing - was lacking in the nonnative speakers; they tended to produce stressed vowels that were too short and unstressed vowels that were too long.

The inability to differentiate stressed and unstressed syllables by means of syllable length has also been found to affect the oral comprehensibility of L2 learners. In a study carried out to define intelligibility parameters, Anderson (1993) measured the duration of interstress intervals in English in the speech of non-native speaking subjects and native English speakers. Native speakers had the shortest average duration of an interstress interval and the fewest number of stresses, the most "intelligible" group had the next shortest interval and next fewest number of stresses and the "least intelligible" group had the longest time interval and the greatest number of stresses.

2. Rhythm units: quantity and quality of unstressed vowels

Differences in syllable length between English and Spanish are also related to the location of the unstressed syllables in the rhythm unit. Analyses done of the rhythm system of both languages show significant differences in the duration of unstressed syllables in prestressed and poststressed positions (Borzzone and Signorini, 1983; Klatt, 1975; Knowles 1974). Syllables and words tend to group round a peak forming rhythm units. In English the syllables and words which anticipate the peak, the *proclitics*, are rushed over on the way to the peak while

those that follow the peak, the *enclitics*, are lingered on. Thus, in the following set of words:

- | | |
|---------------------|------------------|
| 17. <i>republic</i> | <i>direction</i> |
| <i>determine</i> | <i>banana</i> |
| <i>forgotten</i> | <i>exciting</i> |

Knowles (1974) has found on average for all six words that the three syllables are in a percentage ratio of 16:44:40. The proclitic is considerably shorter than the enclitic. In Spanish, on the other hand proclitics have been found to be slightly *longer* than enclitics (Borzzone and Signorini, 1983). The other feature that makes the length of clitics quite different in the two languages is the reduction of vowel sounds. Even though vowels in unstressed position are weakened in Spanish (Brozzone and Signorini, 19983), the unstressed vowels in a word like *banana* for example, all belong to the same /a/ phoneme, i.e., /*banana*/. In English, on the other hand, the unstressed vowels in this same cognate word changes completely to the centralized vowel sound /ə/, i. e., /*banæna*/.

Failure to pronounce unstressed syllables with the proper duration and centralized vowel was found in our data as the main cause of error in the pronunciation of polysyllabic words. This error was particularly evident in words beginning with an unstressed syllable which contained the vowel *a*; these were pronounced with the Spanish sound /ə/ instead of the English reduced central sound /a/, as in the following samples:

- | | |
|----------------------|---------------------|
| 18. <i>attention</i> | <i>analysis</i> |
| <i>approache</i> | <i>appropriate</i> |
| <i>allow</i> | <i>particularly</i> |

The error were less noticeable in medial and final post-stressed position such as in the following samples:

- | | |
|----------------------|---------------------|
| 19. <i>narrative</i> | <i>particularly</i> |
| <i>necessary</i> | <i>character</i> |
| <i>significant</i> | <i>immediately</i> |

But even though enclitics are longer and therefore error in syllable quantity in this position are not as evident as in initial position, failure to produce reduced central sounds made the unstressed syllables in this poststressed position, sound too clear-cut and arrhythmic.

Clitics can also be grammatical words, as in the following examples:

- | | |
|------------------------|----------------------|
| 20. <i>for nothing</i> | <i>detest her</i> |
| <i>some porridge</i> | <i>they can't've</i> |
| <i>can Harry</i> | <i>to help you</i> |

Both proclitics and enclitics behave rhythmically exactly like the unstressed syllables of polysyllabic words and have reduced vowels and/or short duration when proclitic. Knowles (1974) found an average percentage ratio for the three syllables in the phrases in (20) of 18:37:45. As with polysyllabic words, a higher frequency of errors was found in our data with grammatical words when proclitics, as in the following samples:

- | | |
|-------------------------------------|---------------------------------|
| 21. (a) <i>I will</i> tell you | (d) <i>I can</i> do it. |
| (b) <i>I had been</i> staying there | (e) <i>at a certain</i> place |
| (c) <i>He would</i> consider it | (f) <i>from the main</i> stream |

Failure to pronounce the grammatical words when proclitic, with correct vowel reduction and syllable length was more frequent in our data with pronouns and auxiliaries. Generally speaking, subject pronouns are used in Spanish only in emphatic situations, as in the following examples:

- | | |
|--------------------------------|-------------------------------|
| 22. (a) Compré un carro nuevo. | (I bought a new car .) |
| (b) Yo compré un carro nuevo. | (I bought a new car.) |

Emphasis or sentence focus is obtained in English by shifting the tonic from the word *car* to the pronoun *I*, in Spanish, sentence focus is obtained just with the occurrence of the pronoun. However, mispronunciation of pronouns is not restricted just to subject pronouns; learners of English with a Spanish background tend to overemphasize pronouns in English in every position in the sentence. Again, this error is mainly due to their inability to make distinctive difference in length between stressed and unstressed syllables.

Auxiliary verbs were also frequently given the wrong durational value, especially when proclitic, in some cases this error resulted in misunderstanding of the message. Such was the case of the pronunciation of the modal *can* in a sample such as 21 (d): Although the speaker intended the utterance to be affirmative, it sounded negative because of the length of the vowel sound in the modal and especially because of the failure to shorten the word i.e., I can /kan/ do it. Reduction of the vowel sound and shortening of the modal distinguishes an affirmative sentence from a negative one in English. The pronunciation of *can* in its citation form is /kæn/, but within context, in the affirmative, the

vowel is usually centralized to a /ə/ or completely eliminated and the whole word is significantly shortened in length in relation to the rest of the utterance *I can* /kən, kn/ do it. The negative form of the verb is usually just signaled by the quality and quantity of the vowel (e.g., *she can* /kən, kn/*clean house but she can't* /kæn/ *cook*).

It is important to note that from the two phonological features signaled above as characteristic of clitics in the rhythm unit in English- reduction of vowel sound and shortening of the word- it is the latter feature that has been found to be of more significance for the rhythmic pattern. Failure to reduce vowels correctly in the appropriate places does not always seem to be the cause of the so-called "syllable-timed" rhythm in the speech of non-native speakers of English. Taylor (1981) carried out a survey in which both speech and reading of experienced non-native teachers of English of varied language backgrounds were recorded and analyzed. From the twenty four subjects who achieved acceptable English rhythm in his survey, fourteen used none or very few weak forms and generally did not properly reduce vowels in unstressed syllables. Lengthening and shortening syllables adequately in chunks seemed to be more important to avoid a syllabic pattern of sounds than other features of rhythm.

The NNTES analyzed in our data were able to produce certain phrases in English with correct rhythmic patterns, i.e., proclitics were short and unstressed vowels were weakened and centralized. The following are samples of such phrases:

23. (a) *a lot of* (e) *at the end*
 (b) *a look at* (f) *from the time*
 (c) *not at all* (g) *in order to go*
 (d) *point of view* (h) *by the way.*

However, the same grammatical words in the pronunciation patterns of the same subjects were mispronounced in other situations, to such a point, that they seemed to be stressed, as in the following samples:

24. (a) **an** identity (e) **at a** certain place
 (b) **a** research (f) **from the** main stream
 (c) **the** author (g) **I** started **to** study
 (d) **the** movie (h) **the** use **of** that word

The approximation to the rhythm of English in samples (23) was

probably due, to their being high frequency phrases and therefore acquired as whole chunks. Evidence has been provided for the interdependence of prefabricated language and phonological learning (Vihmann, 1982). It is believed that when such ready-made phrases are acquired in an unanalyzed way, they are not filtered through the first language phonology (see Seidlhofer and Dalton-Puffer, 1995, for further reference). This seems to be the case with the samples in (23). The grammatical words in these samples have the correct syllable quantity and centralized weak vowel /ə/. In samples (24), on the other hand, the length and quality of the vowel sounds in the grammatical words approximate more the quantity and quality of vowel sounds in Spanish. The rhythm of Spanish filters through in these latter samples may be because in these utterances the speakers are consciously putting together grammatical words and content word.

The inability of the NNTES to extrapolate the correct rhythmic patterns produced in fixed phrases such as those in samples (23) seems to corroborate Bialystok's findings (1982) on the constraints in acquiring language only in an unanalyzed way:

Although unanalyzed knowledge is structured, the mental representation does not include access to that structure, and so transformations and operations on that knowledge are precluded (p. 183).

The assumption is that if knowledge is analyzed, then certain uses may be made of that knowledge which cannot be made of knowledge which is unanalyzed. This assumption seems to be corroborated in our data: the NNTES approximated the rhythm of English only in high-frequency phrases. It is assumed that these phrases were learnt in an unanalyzed way because of the subjects' inability to extrapolate the correct rhythmic patterns to other utterances in their speech. Fossilization of incorrect syllable length and vowel reduction in the vast majority of utterances seems to be an indication that the NNTES formed inaccurate acoustic images of these phonological features which were then set in their pronunciation patterns because of lack of proper instruction and correction. It has been stated (Vigil & Oller, 1976) that unless learners receive appropriate sorts of cognitive feedback concerning errors, those errors can be expected to fossilize.

Conclusión

The data presented in this paper give support to phonological fossilization due to inadequate or insufficient instruction of the rhythm of English. All the teachers analyzed expressed their high motivation in achieving a near-native pronunciation; they had received formal pronunciation instruction in their teacher training program and they were able to acquire other phonological features of the language. Some phonological phenomena, however, are more difficult to acquire and require stricter attention. Major (1987) has stated that L2 learners are able to overcome phenomena of which they are consciously aware. For example, it is easier to overcome phoneme substitution than substitution of prosodic alteration, such as those of rhythm, because the latter are largely unconscious. Thus, it is relatively easy for the Spanish speaker to master the / /, as in think, because the difference with /s/, the sound with which it is usually confused, is quite obvious. Differences in the rhythm system, especially those of syllable length, are more difficult to perceive because rhythmic patterns are superimposed on the utterance and it is hard to focus on them without also paying attention to other phonological features. Furthermore, syllable length, called the heart of the rhythmic system (Wong, 1987:25) presents one of the most significant phonological differences between English and various other languages, including Spanish. A technique has been suggested by the author in previous papers (Chela, 1991,1993) to overcome the auditory difficulties in perceiving syllable length. A lot more is needed in relation to the acquisition and teaching of rhythm from L2 researchers and materials designers. Only with stricter attention to instructional procedures and valid measures of the effects of the procedures used can we expect to enhance this phonological feature in pronunciation teaching programs.

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