Prosodic competence in reading aloud: an acoustic corpus-based study of native and non-native (Spanish) speakers of English[1][2]

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ABSTRACT

This study focuses on the application of prosodic analysis to the assessment of pragmatic competence in learners of English as a foreign language. In it we present a comparative analysis of the way pragmatic information is conveyed by native and non-native EFL teachers reading stories aloud. In English intonation realises the organization of information structure in spoken discourse, and communication between speakers develops through the interplay between given (old) and new information –marked in English by the placement of the tonic stress. Competent speakers in English are able to combine the conceptual status of given and new with its expression through tonicity. Another relevant aspect lies in the selection of tones made by native and non-native readers and how this affects the pragmatic interpretation of the text. The lack of connection between prosodic selection and pragmatic meaning by non-native readers makes listeners resort to their knowledge of the world in order to obtain all the information that should have been provided by prosody. To sum up, we suggest that the awareness of intonation patterns has important implications for the theoretical and practical approaches to language teaching.

Key words: interlanguage, prosody, reading aloud, language teaching.

La competencia prosódica en la lectura de textos en voz alta: estudio de un corpus de hablantes de inglés nativos y no nativos

RESUMEN

El presente artículo estudia la aplicación del análisis prosódico a la evaluación de la competencia pragmática de aprendices de inglés como lengua extranjera. En él se presenta un análisis comparativo del modo en que la información pragmática se transmite por profesores de inglés nativos y no nativos en la lectura de textos en voz alta. En inglés la entonación es la encargada de transmitir la organización de la información en la lengua hablada, y la comunicación entre los hablantes se realiza mediante el intercambio entre información nueva y antigua a través de la posición del acento tónico. Los hablantes de lengua inglesa con compentencia lingüística son capaces de combinar el estatus conceptual de la información nueva y antigua y de su expresión a través de la tonicidad. Otro aspecto importante tiene que ver con la selección de tonos por los lectores nativos y no nativos, y cómo afecta a la interpretación pragmática del texto. La falta de relación entre la selección prosódica y el significado pragmático en los lectores no nativos hace que la audiencia deba

recurrir a su conocimiento del mundo para inferir la información que debería ser transmitida a través de los rasgos prosódicos. En resumen, consideramos que la conciencia de la importancia de los patrones entonativos tiene consecuencias directas en los enfoques teóricos y prácticos de la enseñanza de la lengua.

Palabras clave: interlingua, prosodia, lectura en voz alta, enseñanza de la lengua.

1. CORPUS STUDIES AND FOREIGN LANGUAGE TEACHING

The use of corpus studies has proved essential in the understanding of naturally occurring speech in native speakers of a language (Aijmer & Altenberg, eds. 1991; Johansson & Stenström, eds. 1991; Romero Trillo, 2001). In recent years a large number of studies have also appeared dealing with the application of corpora (eg. Cobuild, CANCODE, etc.) to the development of second language teaching materials. As Granger (1998) suggests, the analysis of second language learners' data offers interesting research possibilities in different areas of both theoretical and applied linguistics, as Romero & Llinares (2001) have shown.

One of the areas in Applied Linguistics that has been traditionally neglected is the description of prosody in the language learning process. In spite of its importance in communication, there is a tendency to forget that phonetics cannot be restricted to the study and correct use of segmental features; correct suprasegmental features are essential to prevent pragmatic misunderstandings. Hewings (1995: 261-262) for example, states that non-native speakers (NNSs) do not tend to make a distinction between rising and falling tones in their readings, whereas this is common in the case of native speakers (NSs). This implies that NNSs overuse falling tones which, according to Hewings, "may be interpreted as being contentious or may lead to a situation in which participants face some conflict of views". Evidently, in this type of studies, corpora have a role to play since they permit the study of contextualized spoken language material.

Among the many uses of the spoken language in class, reading stories aloud is a very frequent teaching activity, not only in first but also in second language environments. Naturally, prosodic and pragmatic competence in reading aloud is also a need for non-native teachers of English. According to Halliday (1970) and Tench (1996), learners of English need to master the system of intonation not only in order to make themselves understood or sound less "foreign", but also to be capable of expressing different ideas: if the intonation of an utterance changes, the meaning changes. In fact, intonation is a part of the grammatical system of a language and its choices are comparable to any in the other systems: e.g.: tense, aspect, etc. Given its importance, we believe it would be interesting to look at the similarities and differences between native and non-native readers.

In our opinion, such comparison can only be of text in context. The study of isolated sentences cannot lead to any significant conclusion, since the participants may be thinking of different contexts when they produce an utterance. In this case, the choice of a specific intonation option would respond to factors not shared by the different participants in the study. Because of this, we believe that intonation has to be analysed in a well defined and contextualised text.

2. READING TO CHILDREN IN AN EFL CONTEXT

Reading aloud, as Brazil (1992) states, differs from speaking because it is a complete activity in itself, i.e. the origin of the production is pre-defined and the reader merely interprets the text, whereas natural spoken language is dynamic and implies a continuous updating of the information that is being transmitted. This type of reading involves translating the text from the written to the spoken mode. This transformation takes place through a series of choices within the intonation system that gives expression to the interpretation the speaker has made of the written text.

Furthermore, reading forces a selection among the variables that could cause prosodic variation in a text and, while respecting the dialogic nature of communication, enables the reader to choose from all the possible prosodic options available in the language.

One difference in the performance of a reader has to do with the attitude towards the text. Brazil (1992) suggests that there are two ways of approaching the task:

1. He or she may choose to enter the text, interpreting it and performing it in his reading aloud. In this way, the reader informs the listener of what the text means from his point of view. This is called 'direct reading'.
2. The reader may stand outside the meaning of the text and merely act as the medium. In this way the reader only expresses what the text says from a denotative point of view.

Another variable not to be forgotten in this type of analysis is the audience. Child-directed speech, according to Garnica (1977), is higher in pitch, more exaggerated in intonation and slower in tempo than speech among adults. Therefore, the performance of adults reading aloud to children is expected to work along similar lines and so to vary significantly from spontaneous conversation.

Taking all these conditioning factors into account, in this study we compare the tonicity/prominence and types of tones used by native and non-native speakers of English in order to assess the transmission of pragmatic meaning and the comprehension problems that may arise from an 'inaccurate reading'.

3. METHODOLOGY AND DATA DESCRIPTION

The present analysis is based on a children's story, "The dog show" by J. Crebbin, which is read aloud to five-year-old children by four different readers: two native EFL

teachers and two Spanish university students of English with practice in reading English stories in front of an audience. Although this analysis can be considered a pilot study based on a limited sample of readers, the results will reflect interesting differences between the reading of the native and the Spanish non-native teachers that can be used as a basis for further studies.

The selection of the text was based on its dialogic and multi-functional characteristics. It is a modern tale that vividly depicts the features of language used between adults and children –the main character being a little girl who interacts with adults, other children and her dog. The readers did not know the text in advance and did not know the purpose of our study.

The analysis of the data covers two areas based on the comparison between native and non-native readers:

— Functional and pragmatic interpretation of the location of the tonic syllable.
— Functional and pragmatic interpretation of the tones used.

The description of English intonation is based on Halliday (1967, 1970), who divides intonation into the following three co-occurring systems:

— 'Tonality': the division of utterances into meaningful and coherent independent units of information: the 'tone groups'
— 'Tonicity': the prominent syllable that marks the part that the speaker wants to show to be the most important in the message. In English, this feature is generally marked through amplitude.
— 'Tone': the melody with which a tone group is pronounced. This feature can be observed in the pitch contour of the segments.

Halliday (op.cit.) classifies primary tones as follows:

   Tone 1: falling
   Tone 2: rising
   Tone 3: level-rise
   Tone 4: rise-fall-rise
   Tone 5: fall-rise-fall
   Tones 13 and 53: compound tones (1+3 and 5+3)

The readings were digitalised and then subjected to acoustic analysis in order to ascertain their tone, tonality and tonicity features. For this purpose, we used an intonation analysis programme, Speech Analyzer for Windows, developed by the Summer Institute of Linguistics (http://www.sil.org), which provides the acoustic parameters –pitch, length, duration, amplitude, wave form, etc. – that have constituted the basis of our study. In our case, we transferred our recordings to the program system and then the program showed the prosodic patterns of each utterance.

4. ANALYSIS OF THE DATA

The selection of the functions under analysis was based on the significant relationship between intonation choices and pragmatic meaning in the text, and their argumentative value in the development of the story. Here we present the functions:

— *Salutation*
— *Positive Feedback and Evaluation*
— *Encouragement*
— *Sympathetic Statement*
— *Emphatic Request*
— *Command*
— *Emphatic Assertion*

In the classification below we show the specific utterances in the text that realise these functions and the way they are performed by the different readers. All instances of direct spoken language in the text were numbered for the analysis.

4.1. SALUTATIONS

<1>. *'Hello, Spike', she said*
<46>. *'Hello', said the vet*

In <1> Native Speakers (NSs) use one Compound Tone Group (13, 53) in which they include the reporting clause. Non native Speakers (NNSs) use two Tone Groups (1/1, 5/1), probably because of punctuation or because they perceive the reporting clause as a detached element.

In <46> both NSs and NNSs separate the reporting clause into two different tone groups. It is interesting to note the fact that three of the four readers choose tone 4 (and tone 3 in the case of the other NNS). According to Garnica, these are tones typically used by adults addressing to children. The same occurred with the compound tones (13 and 53) used by the NSs in <1>, which reflect a social relationship parallel to adult/child, in this case child-owner/dog. This fact is not observed in the case of the NNSs.

As Llinares & Romero (2001) show, in the case of reporting verbs, NSs differentiate prosodically when the sayer is known –first example–, and when the sayer is not known –second example. In the former, the Tone Group (TG) includes the reporting clause, whereas in the latter, there is usually a different TG. The NNSs in our corpus never reflect this difference.

- "Hello, Spike", she said. She put some dog biscuits in his bowl. **(2)** "**Good dog**", she said.
- "Sit", whispered Alice. Spike sat. **(50) "Good dog**", said the vet.
  Alice beamed.
  When Alice said, "SIT", he sat. When she said, "STAY", he stayed, and as soon as she called him he bounded over to her wagging his tail. **(51) "Good dog**", said Alice. She joined the end of the line. "Surely Spike will win", she thought. He had done so well.

- "My hat!" cried the vet. Everyone kept a tight hold of their dogs while the hat jumped and flew across the field. But Alice whispered in Spike's ear. At once, he was off. In a matter of minutes he had chased the hat, caught it in his teeth, and carried it safely back to Alice.
  (58) "Good dog", said Alice.

4.2. POSITIVE FEEDBACK AND EVALUATION

<2, 50, 51, 58>*'Good dog'*

NSs use falling tones (1,5) in all the examples. When tone 1 is used, the utterance is divided into two TG with two consecutive tones (1+1). In these cases we find a functional correspondence between tone 5 (emphatic) and the sequence 1+1. This correspondence has also been observed in the prosodic analysis of discourse markers, as Romero Trillo (1997) points out.

NNSs use the following variation:

— Tone 3 in three cases (probably overused because this is a tone commonly used in speech addressed to children).
— Tone 5 in three cases.
— Tone 1 in three cases.

Here we should notice the tonicity of the structure. NSs make the element 'good' prominent in three out of the four instances:

— In <2>, the first time it appears.
— In <50>, the first time the vet praises the dog.
— In <58>, final evaluation of the results.

In <51> the term 'good' is unmarked for NSs because the dog has done what was expected, and because it was said by Alice, the owner of the dog, who already knows its expertise.

As a contrast, NNSs only make the adjective 'good' prominent on the first occasion it appears. In the rest of the cases the tonic pattern used indicates that it is always perceived as 'given'.

<65, 67> *'Well done'*

NSs make two TGs or a compound one (5/5, 53), whereas NNSs always make one TG with the tonic falling on 'done', i.e., omitting the evaluative meaning.

<68> *'Well done, Spike'*

With the addition of 'Spike' NSs still make 'well' prominent. One makes three TGs with Tone 3 (language addressed to children) and the other makes the compound tone 53, and the element 'Spike' with tone 5.

NNSs again stress 'done' and add 'Spike' as a separate TG.

4.3. ENCOURAGEMENT

<40> *'Good luck'*

Here the element 'good' is no longer evaluative as in the previous cases, and that is why the tonic is not placed on this element. All speakers stress the word 'luck', probably because it is a formulaic expression. It is pragmatically unlikely to stress the element 'good' in contrast to 'bad', i.e. wishing 'bad luck', in a standard situation.

4.4. SYMPATHETIC STATEMENT

<6> '*Never mind'*

The fact that the proposition has a negative connotation could explain why all readers stress the element 'never'.

If we compare the realisation of the sequences 'good luck', 'good dog', 'well done' and 'never mind', we can observe a gradation of possibilities in the tonicity structure. This can be explained in terms of the concept of "grammaticalization variation" (Romero Trillo, 2001), which suggests that there are different degrees and classes of grammaticalization depending on the placement of the tonic in multi-word discourse markers. Likewise, it is possible to say that tonicity contributes to the grammaticalization status of other kinds of formulaic expressions. In the present case, we find the following cline:

good **luck**------------------------------good dog---------------------**well** done/**never** mind
(T2)   (T=)   (T1)

In this cline we can see that in the first structure (T2), 'good luck', the tonic falls on the second element, the noun 'luck', in most cases.

In the second example, structure (T=), in spite of the surface similarity, we can have a variation of tonicity either on 'good' or on 'dog', which depends on its evaluative or interactional contextual meaning.

In the last examples, structure (T1), the tonic always falls on the first element, the adverb, because it carries the most important evaluative meaning.

In terms of language acquisition and interlanguage, it is interesting to notice that NNSs tend to perform like natives in the T2 structure, since it is more congruent with the unmarked tonicity structure of English.

4.5. EMPHATIC REQUEST

<9> *'Oh, no, please don't'*

The description of the NNSs' performance is as follows:
5//Oh no, <u>please</u>//1// <u>don´t</u>//
3//Oh /<u>no</u>//3// please <u>don´t</u>//

And NSs´ intonation and TG distribution is the following:

1//<u>Oh</u>// 1//<u>no</u>// 13// please <u>don't</u>//

3//Oh/ <u>no</u>// 3// <u>please</u>// 4//<u>don't</u>//

Considering that there are three elements in this utterance which realise the pragmatic function of 'request' (*no, please, don't)*, we observe that the NSs make all of them tonic. In the case of the NNSs only two of these elements carry the tonic. This is not only shown in the tonic distribution but also in the TG division: NSs make three TGs, whereas NNSs only make two.

NSs select the negative item in an alternative way: when the element 'no' is alone in a TG, the element 'don't' appears with secondary tonic; when the element 'no' appears in combination, the item 'don't' realises its own TG with primary tonic. This implies that there seems to be a principled relationship between tone group division and tonicity, which is not present in the case of the Spanish readers.

4.6. COMMANDS

<3> 'In you go'

In this utterance, tonicity echoes the previous contrast between native and non-native speakers. NSs use a compound tone 53, with the tonics on 'in' and 'go' (Figures 1 and 2) whereas NNSs use simple tones with the tonic on the element 'in' (Figures 3 and 4):
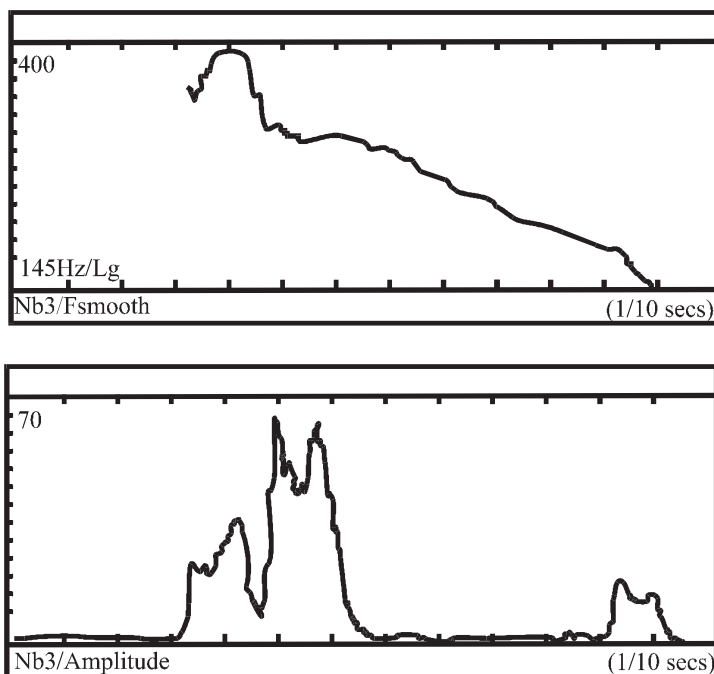

Figure 1. Acoustic parameters of the utterance 'in you go' in native reader A.
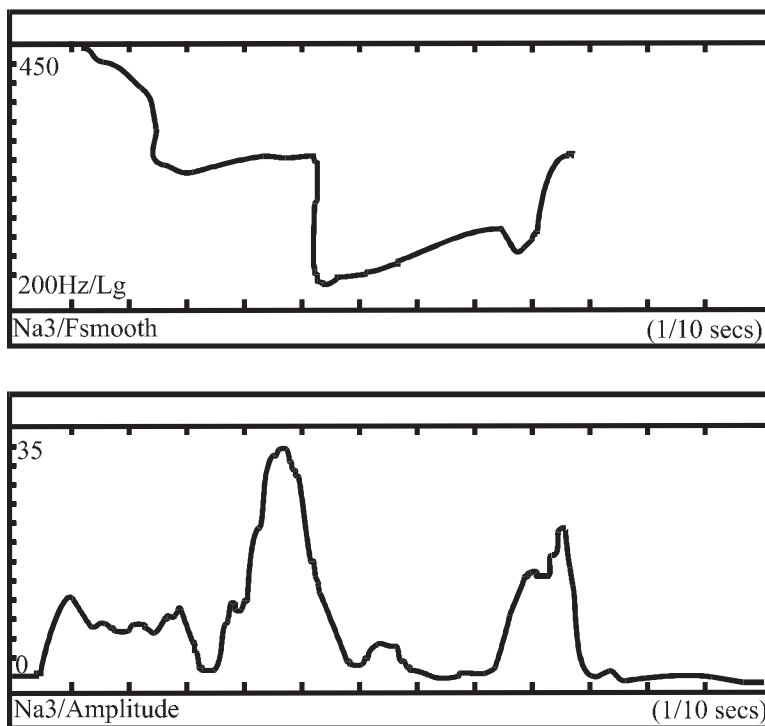
Figure 2. Acoustic parameters of the utterance 'in you go' in native reader B.

Figures 1 and 2 above show that NSs signal the initial fronted –marked- element not by amplitude, as in unmarked tonics, but by duration. The preposition is realised with tone 5, an emphatic tone, with a duration of 240 msec and 280 msec in each speaker. On the other hand, the amplitude of the element 'in' is much smaller than that of 'go', which has a secondary role in the utterance.

On the other hand, NNSs emphasise the preposition by means of amplitude, in the same way as NSs do in unmarked tonicity (Figures 3 and 4 below).

As a matter of fact, the duration of 'in' in both readers is 150 msec and 176 msec respectively, but the average amplitude is 5dB higher than in NSs. The element 'go', however, is marked by duration. There are two possible interpretations of the NNSs performances:

— They use marked tonicity by emphasising the preposition with amplitude, in contrast with unmarked tonicity, which they realise through duration (the opposite of NSs).
— They place the tonic on the last element ('go'), through duration, without taking into account that there is a marked fronted element.

It seems that there is a negative correlation between duration and amplitude in both groups of speakers. Our hypothesis is that in stress-timed languages, like English, marked
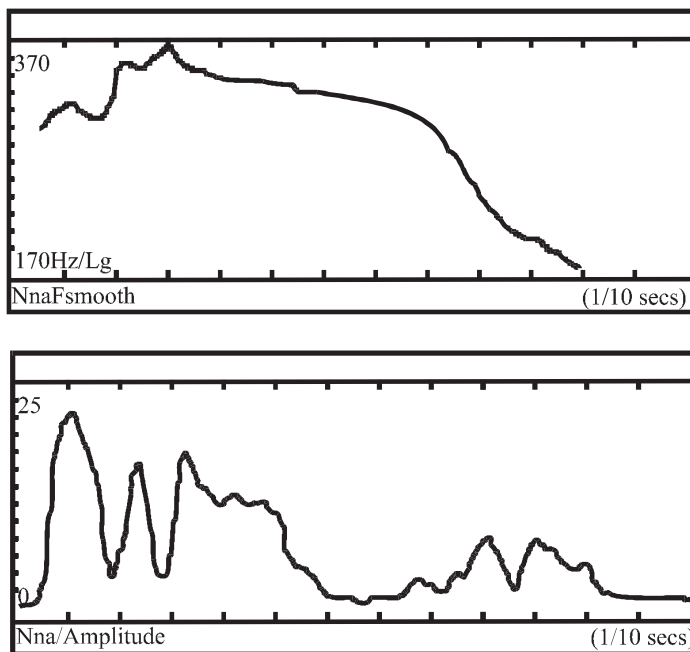
Figure 3. Acoustic parameters of the utterance 'in you go' in non-native reader A.
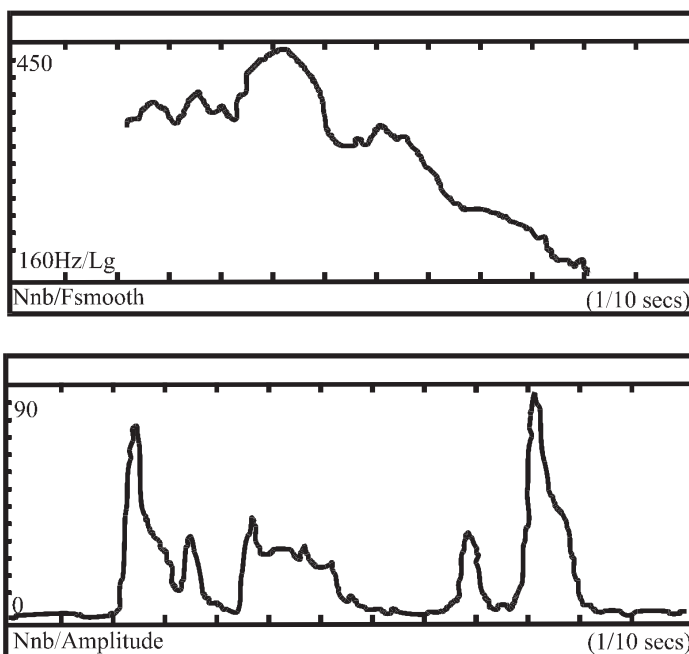

Figure 4. Acoustic parameters of the utterance 'in you go' in non-native reader B.

tonicity of a grammatical item is signalled by duration rather than by amplitude, which would be the unmarked situation. Non-native speakers did not perceive this difference and marked the element 'in' by amplitude, signalling the last element by duration.

4.7. EMPHATIC ASSERTIONS

<23> *'There won't be any cats'*
NSs stress 'be' –since it is marked as emphatic in the written text-, whereas NNSs stress either 'won't' or the elements in the sequence 'there, any, cats'. This fact can be observed in other cases in which NNSs do not realise marked tonicity not only in pragmatically oriented cases, but also –like in this instance– in graphologically highlighted items.

<18, 33, 70> *'Sometimes he does'*
This utterance appears three times in the text and it is very interesting to analyse each of its realisations since they offer different prosodic and pragmatic patterns as they appear in different contexts.

In <18> and <33> the NSs use compound tones (53, 13) which place the primary tonic on the adverb 'sometimes', because the auxiliary verb –'does'– is anaphoric and does not carry the most relevant information.

The case of NNSs is slightly more complex. In <18> they use two tones (3/5, 5/5), showing an emphatic assertion in Alice's response. In <33> they reduce tonality and only make one TG, as if the clause presented given information. In all these cases, the Tonic falls on 'does' following the general pattern of unmarked tonicity. The interesting fact is that, since they see it as emphatic, they indicate this by giving wider amplitude, with tone 5, to the last element. In general, there seems to be a tendency for NNSs to emphasise grammatical elements by means of amplitude rather than by duration, as we will show below.

The third instance is the last sentence of the text. Alice is proud of what she had intended to explain in <18> and <33>, i.e., her dog follows her commands. In these two utterances 'sometimes' is an important element, whereas in <70>, when it has been proved that Spike does obey her, the important element is 'does'. This is why NSs stress 'does' in this last instance.

<37> '*That's what I said'*
NSs make 'I' prominent in both cases. On the other hand, one of the NNSs stresses 'said' with tone 1, and the other stresses 'that' and 'said' with tones 3/5, which is an emphatic tone. Again we can observe the NNSs' tendency to stress the unmarked element with an emphatic tone. The sequence 3/5 seems to be a frequent choice in NNSs to express emphasis.

<38> '*It's a dog show'*
NSs stress 'dog' with tones 1 and 5. One of the NNSs stresses 'dog' with 5, but the other stresses 'dog' and 'show' with tones 4 / 5. This is another example of overemphasis in NNSs' use of tones.

<52> '*Surely, Spike will win*'

NSs stress 'surely' and 'win' with tones 5/3.

One of the NNSs makes three TGs with tones 3/3/5, and the other with tones 3/5, the latter not on 'win' but on 'Spike'. We can observe again the general use of tones 3/5 to overemphasise in the case of the NNSs.

<56> '*I'm sure he's good at something*'

NSs make tone 53 on 'sure' and 'something'. One of the NNSs stress 'good' with 5 and the other uses tones 4/5/5, also indicating overemphasis.

5. RESULTS AND DISCUSSION

In this section we show the production length of the native and non-native readers of the text. In order to carry out this analysis we measured the time taken to read aloud the utterances that realise the functions analysed above in both groups of readers: the mean duration of native speakers was 912.6 msecs, and in the non-natives it was 1101.5 msecs.

One interesting thing to notice is that NNSs tend to lengthen their utterances with emphatic Tone Groups. Another interesting fact is that NNSs tend to perceive repeated instances of the same form –although in different contexts–as given information, and therefore reduce the duration of the utterance regardless of its functional meaning. This can be clearly observed in examples <2>, <50>, <51>, <58>, with the expression "good dog".

The four appearances of the expression have a different function and duration (see Table 1):

— <2>: interactional –said by Alice (the owner);
— <50>: evaluative –said by the vet;
— <51>: interactional –said by Alice;
— <58>: emphatic, final evaluation.

Table 1. Duration of the utterance 'good dog' in the four readings

	NS-A	NS-B	NNS-A	NNS-B
2	580	492	665	919
50	783	1928	598	898
51	698	810	580	812
58	793	791	665	1022

The data indicate that length varies in NSs according to the function of the utterance, whereas in the non-natives the duration diminishes as the utterance becomes more "given", except in the last case which is clearly perceived as emphatic. Furthermore, NSs increase the duration of the last instance as compared to the first one because they

distinguish between the introduction of a new element and the emphatic use of that element. On the other hand, NNSs basically repeat the duration of the first instance and therefore, are not able to make that subtle distinction. All the analysis leads to the conclusion that length contributes to the information status of an element in relation to its context.

Table 2. Frequency of tones used by both groups of readers.

	1	2	3	4	5	13	53	3/5	4/5
NSs	12		9	8	10	5	10		
NNSs	14		13	1	14		1	4	2

As shown in table 2 above, there is a significant difference in the use of tones 4, 13, 53 by NSs, which correlates with the higher frequency of tones 1,3,5 and the 'combined' 3/5 and 4/5. This shows that Spanish native speakers find it very difficult to maintain double tonicity in a TG in English, and tend to choose other alternatives with single tonics in sequences such as 3/5 and 4/5 that are not characteristic of English NSs' production.

With regard to the use of Tone 4, the second most widely used in English (Halliday, 1970), there seems to be a pragmatic gap in the expression of the meanings conveyed by this contour in the readings by NNSs, especially that of complicity with the listener.

6. CONCLUSIONS

This study makes a number of points about the pragmatic challenges that Spanish learners of English may have to face when reading a text aloud.

The first general conclusion is that NSs make fewer TGs than NNSs. One of the reasons for this is punctuation, as in the case of reporting verbs, which NNSs always consider a separate TG and NSs tend to link with the reported information. Furthermore, NNSs rarely use compound TGs, which indicates that they are not able to include primary and secondary information in the same TG (Tench, 1996).

Another interesting finding is the different mechanism used by NSs and NNSs to mark tonicity. While the former use amplitude, the latter use duration. This is probably due to the fact that the non-native speakers in our study have a syllable-timed language as their mother tongue.

In addition, the non-native speakers find it very difficult to emphasise items that appear in marked position. This can be seen –among other cases- in the use of duration and amplitude in fronted grammatical elements, i.e., what NSs mark by duration is emphasised by amplitude in the case of NNSs. In other words, the groups use the opposite mechanism from the one they use in unmarked cases.

With regard to the use of tones, NNSs tend to overemphasise by means of emphatic tones while keeping the tonic in the unmarked position, which results in a pragmatic

contradiction. NNSs resort to the use of unusual TG combinations, 35, or even 45, for emphatic purposes.

The NNSs in our corpus find it difficult to produce a native-like realisation of some functions and of fixed formulae. In the latter case, they tend to fix the tonic in last position, regardless of the grammaticalization status of the formula, as shown in section 3.4.

Another interesting fact is that NNSs find it difficult to correlate length with the information status of an element, and simply consider 'given' an element which has previously appeared, without taking into account the pragmatic status of the element in that particular context (Lambrecht, 1994).

We believe that the results of our study can contribute significantly to the area of second language acquisition and Applied Linguistics in general. We consider that there is an urgent need to apply this neglected area of prosody to pragmatics in order to obtain a clear picture of the communicative shortcomings of foreign/second language learners. Furthermore, the possibility of working on a specially designed corpus, with the aid of acoustic measurement techniques, shows the enormous possibilities of this kind of research. In the course of such analyses, there is one problem that the analyst has to face, namely, the difficulty of accounting for the array of individual acoustic features supplied by the program, which have to be given significant and coherent unified interpretations. This question overrides technical expertise and has to be tackled by making a decision on the relevant prosodic features that are considered essential for the analysis.

In our opinion, the application of the methodology presented in this paper to the analysis of different national varieties of interlanguage, such as the ones collected in the UAM-Corpus project[3], might be very useful. Although this study cannot claim generalisation due to its still limited size at the time of the analysis, its approach to interlanguage shows some common prosodic difficulties among Spanish learners of English that could be contrasted with learners from other different mother tongues.

To sum up, there are two final points we would like to highlight: the importance of working with learner corpora that compile and describe non-native models of a language; and the necessity of implementing reliable prosodic analyses of spoken corpora so that teachers and learners may work with data and not with intuition. In this sense, the use of Speech Analyzer, which provides an automatic analysis of intonation, is an asset in the development of this type of research. These programs make it possible to submit spoken learner corpora to automatic prosodic analysis and compare them with native speakers' data to highlight differences, which may help teachers who have the difficult task of trying to improve learners' intonation.

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