

NUCLEAR AND PRE-NUCLEAR TONAL INVENTORIES AND THE PHONOLOGY OF SPANISH DECLARATIVE INTONATION

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ABSTRACT

In this study I establish and describe the possible shapes, configurations and underlying tonal sequences of declarative utterances in Spanish. For this purpose I present the exhaustive inventory of tonal configurations that can occur in both the nuclear and prenuclear contours, -considered internal constituents of the intonational phrase-, and give an account of the actual occurrence and grammaticality of the possible combination of contours.

INTRODUCTION

Notation and Framework

The notation and abstract system of underlying intonational units is based on the Pierrehumbert [1] theory of the phonology of English intonation. The contours of the intonational phrases are described as strings of L and H tones consisting of: (i) An initial boundary tone; (ii) A sequence of one or more pitch accents; (iii) A final boundary tone (H%, L%). The implementation of the different combinations of pitch accents and boundary tones determines the F0 contour.

Some Background

It has been sustained by authors like Cunningham [2] and Kvavik [3] that that there is no fixed pattern of pre-nuclear intonation in Spanish. Or, that what they reflect is only sociolinguistic or expressive functions, not a real systematic structure.

Another common assertion about Spanish intonation is the idea, first expressed by Navarro [4], that the tonal peaks always correspond to stressed syllables.

The present research shows, on the contrary, that (1) There is a very definite and predictable pre-nuclear configuration for unmarked declaratives in Spanish; (2) The peaks actually correspond with the unstressed syllables following the stressed ones.

METHOD

Subjects and Data

For this research I analysed several hundred utterances from recorded spontaneous conversations of native speakers from both sexes and different ages, backgrounds and national origin (from several countries in Central and South America, the Caribbean, Mexico and Spain). All individual utterances were analysed and classified according to their sentence-type, internal tonal constituency and semantic-pragmatic value.

Instrumentation

The acoustic analysis of the utterances was performed on the CSL 4300 of Kay Elemetrics. A number of altered pitch files (by means of the Parameter Manipulation Option) was used to test the compatibility of some pre-nuclear shapes with the four characteristic terminal contours of declaratives.

NUCLEAR TONES

In previous work [5], I described the phonology and phonetics of all final contours (nuclear tones) of Spanish. The exhaustive list of possible declarative nuclei (combinations of final pitch accent and boundary tone) is the following:

L* L% (low fall); H+L* L% (low fall preceded by a high on the previous unaccented syllable); H* L% (high fall);

and L+H* L% (high fall preceded by a low tone on the preceding unstressed syllable).

Not all of these, however, are characteristic of unmarked, neutral declarative utterances. By far the most common was the L* L% low-falling contour. In Figures 1 and 2 these final contours are illustrated.

PRE-NUCLEAR CONTOURS

Heads and Pre-heads

Following the British tradition, I refer to the pre-nuclear contours as 'head' and 'pre-head'. The head begins with the stressed syllable and ends with the syllable immediately preceding the nucleus. The pre-head consists of any unstressed syllables before the first stressed one and since they are always low in Spanish declaratives, they are irrelevant for this analysis.

The head, on the other hand, is crucial to tune configuration and meaning, and is described according to their overall shape (level, rising, falling), as well as in their internal constituency in terms of pitch accents.

The "Bouncing Head"

The most common pre-nuclear pattern found for declaratives was overwhelmingly the progressively descending pattern. The pitch begins rather high, progressively stepping down with each peak until it reaches the tonal baseline with the final low fall L* L%. As can be seen in Figures 1, 2 and 3, the descent is not smooth; it takes place in a bouncy kind of way. As a rule, the stressed syllable is low, followed by a rise on the subsequent unstressed one, evidence of a sequence of recursive L*+H pitch accents. Ladd [6] and Gussenhoven [7] have characterized such multi-accented recursive patterns in heads as repetitions of the same contours.

On analogy with the names given by O'Connor and Arnold [8] to specific

tone groups in a mnemonic, graphic way, I will call this pre-nuclear pattern the "bouncing head". Imagine a tennis ball bouncing two or more times on the court before rolling along the floor. The force comes from the bounce, which is the low-toned stressed syllable, followed by the rise on the following unstressed syllable, each successive bounce being lower. The following figures illustrate the most characteristic declarative utterances in Spanish:

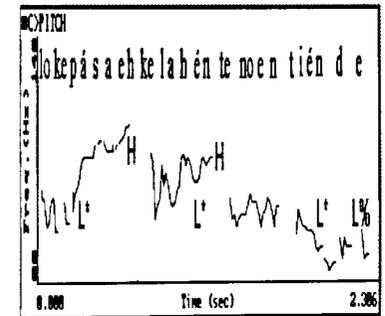


Figure 1. Typical unmarked declarative Spanish utterance with pre-nuclear L*+H sequence and L* L% nucleus "Lo que pasa es que la gente no entiende" (male speaker from Honduras).

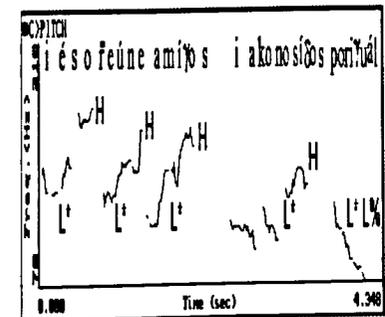


Figure 2. Unmarked declarative Spanish utterance with four pre-nuclear L*+H pitch accents and L* L% nucleus "Y eso reúne amigos y a conocidos por igual" (male speaker from Córdoba, Argentina).



Figure 3. More emphatic declarative with pre-nuclear L*+H sequence and L+H* L% nucleus "Están escogiendo los mejores jugadores" (male speaker from Guadalajara, Mexico).

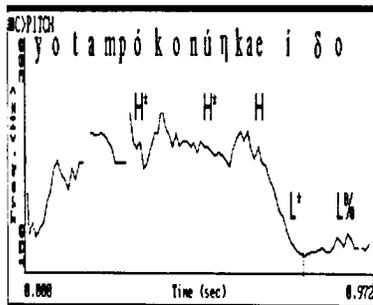


Figure 4. Categorical statement with high head and H+L* L% nucleus "Yo tampoco nunca he ido" (female speaker from Lima, Peru).

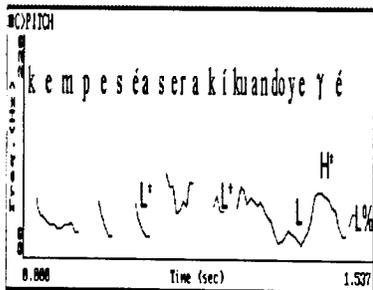


Figure 5. Declarative with low head and L+H* L% nucleus "...Que empecé a hacer aquí cuando llegué" (male speaker from Medellín, Colombia).

RESULTS

The Spanish Declarative 'tune'

The common overall pattern is a falling one, gradually descending into the final low fall. Although most descriptions agree on the descending "finality" of declaratives (Delattre, Olsen and Poenack [9]), to my knowledge only Bolinger [10] and Quilis [11] (implicitly), have described this pre-nuclear declining pattern. Most analyses have tended to repeat Navarro's [4] statement that the note of the first stressed syllable is more or less that on which the rest of the body of the unit is pronounced.

The canonical tune for unmarked declaratives in Spanish is then the combination of a bouncing head and a low fall. Or, in terms of L and H tones, a sequence of recursive L*+H pitch accents followed by a L* L% nucleus.

Variability and its Causes

There is of course a good degree of variability in the domain of declarative intonation, and that has been abundantly documented in the literature. However, it is not caused by factors such as age sex, country or region of origin or sociolinguistic status of the speakers. It rather seems to correlate with emotion, contrast and other kinds of emphatic speech. That is to say, utterances that may still be classified as declarative but have different configurations and tonal structure from the pattern here described, are instances of pragmatically distinct statements from the unmarked kind.

In our data we have statements with high head (Figure 4), low head (Figure 5) and also rising head, but they were perceived as different types of declarative utterances.

Just as Navarro [4] distinguished between "ordinary", "categorical", "dubitative" and "insinuating" statements according to the type of fall,

it is possible to classify the pragmatic meaning of statements with different kinds of heads.

CONCLUSION

This research has uncovered an extraordinary agreement and regularity between dialects: the unmarked head for all dialects has the configuration that I have described as a combination of bouncing head (sequence of L*+H pitch accents), followed by a nuclear low fall L* L%. At least in their tonal underlying structure, there are no dialectal distinctions for this declarative sentence-type.

These findings contradict what has often been said, that there are no fixed patterns in Spanish intonational contours.

As I have shown, the peaks are always on unstressed syllables. At least for pre-nuclear contours, the common assertion that the highest point corresponds to stressed syllables is not in keeping with my findings. The stressed syllable is always low, followed by the high on the subsequent unstressed syllable, even across words and syntactic phrases. If there is at least one accented syllable in the pre-nuclear contour, the pitch accent will be L*+H.

To conclude, my findings show how remarkably predictable and regular the intonational structure of declarative sentence-types is. In the background of the well-documented and striking dialectal and expressive variability of Spanish intonation, this is a significant finding. It shows that the intonational patterns are finite, systematic, characteristic and meaningful.

All these patterns and configurations can be economically generated by a model that includes pre-nuclear and nuclear contours as constituents, as well as the sequence of underlying tones that are the ultimate components of intonational phrases.

REFERENCES

- [1] Pierrehumbert, J. (1980), *The phonology and phonetics of English intonation*, Cambridge, Ma: MIT Dissertation.
- [2] Cunningham, U. (1983). "Aspects of the intonation of Spanish", *Nottingham Linguistic Circular*, 12, pp. 21-54.
- [3] Kvakik, K. (1988). "Is there a Spanish Imperative intonation?", Hammond R and M. Resnick, eds, *Studies in Caribbean Spanish Dialectology*, Washington: Georgetown University Press, pp. 35-49.
- [4] Navarro Tomás, T. (1944), *Manual de entonación española*, New York: Hispanic Institute on the United States.
- [5] Sosa, J.M. (1991), *Fonética y fonología de la entonación del español hispanoamericano*, Amherst, Ma: UMASS Dissertation.
- [6] Ladd, D. (1986). "Intonational phrasing: the case for recursive prosodic structure", *Phonology Yearbook*, 3, pp.311-340.
- [7] Gussenhoven, C and T. Rietvelt. (1992), "A target-interpolation model for the intonation of Dutch", *ICSLP 92 Proceedings*, University of Alberta, pp. 1235-1238.
- [8] O'Connor, J.D. and G.F. Arnold. (1973), *Intonation of colloquial English*, 2nd edition, London: Longmans.
- [9] Delattre, P., C. Olsen and E. Poenack. (1962), "A comparative study of declarative intonation in American English and Spanish", *Hispania*, XLV, pp. 233-241.
- [10] Bolinger, D. (1961), "Three analogies", *Hispania*, XLIV, pp. 134-137.
- [11] Quilis, A. (1981), *Fonética acústica de la lengua española*, Madrid: Gredos.