

Phonetic variations of f_0 range in L1 and L2: a comparison between Italian, English, and Spanish native and nonnative speakers

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The main purpose of our work is to investigate the variations of the frequency range used by native and nonnative speakers.

In the literature, several studies state the relevance of the pitch range parameter and its relative variations for the prosodic analysis of intonational contours; in fact, the frequency excursion of sentences represents a central factor, which can be influenced by certain variations, due to the speaker, the sentence, and the language under investigation. Indeed, there might be several conditions of pitch range variation of a speaker in an utterance: biological, individual, paralinguistic, and linguistic variations (Traunmüller & Eriksson, 1995; Ohala, 1983).

With regard to L2 productions, several studies (in most cases referred to English L2; Busà & Urbani, 2011; Mennen, 2007) have examined the frequency excursion variability of realizations by speakers in their L1 and L2; they have identified a recurrent deviation in the production of a narrower and less modulated pitch range compared to the native speakers of their L2 (Beckman, 1979).

The object of our study is to carry out an analysis of the f_0 range excursion in three different languages, Italian, English, and Spanish. The parameter under investigation will be dealt with from a cross-linguistic perspective (by analyzing the f_0 range of native speakers of the three languages), which will be then compared to productions uttered by learners of those languages. The specific goal of this work is part of a wider research project, which aims to monitor the development of prosodic competences in different foreign languages. In particular, the purpose of the research is to verify the development of these competences in Italian-speaking learners of English (EFL - *English as a Foreign Language*) and Spanish (ELE - *Español lengua extranjera*), and the occurrence of linguistic and prosodic interference.

During the course of the research, several prosodic features of different types of questions were analyzed (the overall description of the f_0 curve trend, the characteristics of the nuclear accent, values and realizations of the terminal contour, pitch range; Orrico, Cataldo, Savy, Barone, in press) which proved the presence (and the persistence) of significant transfer phenomena from L1 to the target language. In particular, differences have been systematically found between the range values of English and Spanish native speakers and English and Spanish FL learners.

In this phase of the research we aim to investigate more deeply the extent, the modalities, and the nature of pitch range differences in order to find the actual reasons behind them, which might be:

- actual phenomena of transfer from L1 (which would imply that the Italian language is characterized by a narrower range excursion compared to the foreign languages under investigation, English and Spanish);
- an overall range reduction in the L2 productions, caused by a series of reasons of psychological nature (during the phases of the learning process of a FL, learners and their productions might be influenced by a certain amount of uncertainty concerning their level of competence in FL), as it happens in other areas of interlanguage.

In the first case, the differences in the range of frequencies used by the speakers might be related to language-specific features of the speakers' native and target languages; in the second case, the variations could depend on situational factors and the context of FL use.

Methodology

The speakers selected for the research project belong to two macro-groups:

- Italian-speaking learners of English and Spanish FL, selected on the basis of their level of linguistic competence (assessed according to the *Common European Framework of Reference*). They are female students aged between 18 and 25 years, who have never been in a foreign country for significant periods, and whose learning experience of the FL is limited to the FL class at university;
- English and Spanish native speakers.

The two groups of speakers have produced utterances both in their L1 and in one of the two FLs. The dataset used in the project consists of yes-no questions with a SVC word order and a Topic + Comment information structure.

The preliminary analyses of the productions are conducted through the labelling system INTSINT. In the following phase of analysis we took different LTD measurements of the f0 curve for *span* and *level* (Patterson, 2000; Mennen, Schaeffler & Docherty, 2012).

For each intonational contour we analysed f0 variations of:

- the overall trend of the curve;
- Topic;
- the terminal contour.

Early results

Results show that the three L1 have systematic differences in terms of f0 *span* and *level*, which pertain to both the overall trend of the curve and the realization of Topic and terminal contour. An interesting aspect concerns the realization of the Topic, which is flat in English and highly modulated in Spanish and Italian; in these last two languages, however, the difference lies in the way in which this modulation occurs. Only a few realizations in L2 move to the target model, in fact most of the L2 productions show the occurrence of transfer phenomena, which are registered regardless of the L1/L2 combination or the aspect of the curve analysed.

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