

1. Name and affiliation of the author:

Elisa Pellegrino - University of Naples “L’Orientale” - Naples

2. First author's email address:

pellegrino.elisa.1981@gmail.com

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4. Title of the paper:

The perception of foreign accented speech.

Segmental and suprasegmental features affecting degree of foreign accent in Italian L2.

5. Abstract

What enables Italian-speaking listeners to discriminate a speech characterized by foreign accent from a native-accented speech?

Over the years a great deal of research on the perception and production of foreign accent has focused mainly on the segmental features deviating from the native speaker’s pronunciation.¹ Similarly, most recent theoretical models accounting for speech production and perception – The Speech Learning Model by Flege (2003), The Perceptual Assimilation Model by Best (1995) and The Ontogeny Phylogeny Model by Major (2001) – have examined above all the production and perception of segments and have investigated the effects of mother tongue (L1) characteristics on second language (L2) speech extensively at the segmental level. As a consequence, for years the role played by the suprasegmental features of speech in the perception of foreign accent has been relegated to subordinate position.²

Nevertheless, recent studies on second language acquisition as well as research undertaken on speech synthesis and on automatic approaches for foreign accent identification indicate that the suprasegmental features of speech are as important as the segmental ones both in the perception of foreign accent and in the recognition of the mother tongue of a non-native speakers of L2.³

The present study considered both levels of analysis. It aimed not only at identifying the segmental features that make the speech of learners of Italian as L2 perceptively deviating from that of natives but its goal also extends to the suprasegmental ones. Moreover, it intended to detect the acoustic correlates of different degree of foreign accent.

The study involved three groups of participants: 1) Chinese speakers of L2 Italian, with the same level of linguistic competence but with different degree of foreign accent; 2) a control group with Italian native speakers; 3) L1 Italian listeners. Since the knowledge of the foreign language and the

¹ For the articulation of vowels see for example Flege, 1997; Pallier et al., 1997; Walley and Flege, 1998; for consonants, instead, see Flege, 1991; Flege et al., 1995; Tsukada et al., 2004; Tsukada, 2005.

² Piske, MacKay, Flege 2001.

³ Horgues, 2005; Ramus e Mehler, 1999; Boula de Mareüil, Marotta, Adda-Decker 2004; Boula de Mareüil & Vieru-Dimulescu 2006, Marotta, 2008, Piat et al. 2008; Marotta & Boula de Mareüil, 2010.

familiarity with the foreign accent were proved to play a relevant role in the recognition of the mother tongue of a non-native speaker⁴, all listeners were not competent in Chinese.

To detect the influence of the segmental and suprasegmental features on the perception of the degree of foreign accent, L1 and L2 Italian speakers were recorded while reading a text (about 100 words). The recordings were taken in single sessions with every speaker in an anechoic chamber and then they were presented to a large number of L1 Italian listeners. They were asked to rate the degree of foreign accent of the single utterances using a three-point scale (0= no accent; 1= mild accent; 2= strong accent).

The L1 and L2 corpus was analyzed for single speech chains. For each chain we measured the number of syllables really uttered, their duration, the lowest and highest f_0 values, the occurrence of disfluencies, the length of silent pauses between the speech chains. On the basis of these measures, the following rhythmic-prosodic parameters were calculated: articulation rate (AR), speech rate (SR), fluency (F), tonal range, percentage of silence, mean duration of silent pauses.

At segmental level, contrastive analyses on formant patterns of the vowels and on the articulation of consonants uttered both by Italians and by Chinese participants were carried out. The F1/F2 chart of stressed and unstressed vowels and the F1/F2 chart of stressed vowels in open and closed syllables were constructed. The syllable composition, the duration of stressed and unstressed vowels, the length of stressed open and closed syllables, the fundamental frequency and the intensity of syllabic segments were considered too.

The results of spectroacoustic analysis were related to the data of the perceptual test in order to determine the acoustic correlates of the different degrees of foreign accent.

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⁴Marotta & Boula de Mareüil, 2010.

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