

University of Macau Linguistics Seminar

Title: “Voice and emotion in European Portuguese”
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Date: Wednesday, February 3rd, 2010
Time: 16.00
Venue: L105

Abstract

Emotions are expressed acoustically and perceived through parameters related to Voice Quality (Gobl 2003, Johnstone 1999), in particular fundamental frequency and duration (Cahn 1989, Oudeyer 2002). While some of the parameters are language independent, others are part of the specificities of a Language or an individual speaker. Speakers vary in their capacity to express emotions verbally, as well as their capacity to recognize and interpret attitudes or emotions of others. Research has shown that emotions are not equally recognized. Zovato *et al* (2004), using perceptual tests, demonstrated identification problems between the pairs neutral/sadness and joy/anger, while Sawamura (2007) found that, in identification tasks, disgust is similar to anger, surprise similar to joy, and fear is often mistaken for sadness. According to existing research, joy, sadness and anger can be considered basic emotions, which are easier to identify perceptually across different languages and cultures.

Variations in voice quality (habitually defined as the tone of the person's voice), are essentially related to modifications of the glottal source parameters, such as: F0, jitter and shimmer. Voice quality is affected by speech prosody, emotional state and, often, by voice pathologies.

The present research is a first description of voice and emotion for European Portuguese. Based on studies for several languages (Finish, English, German), Voice-related parameters varying according to the emotion expressed were studied. The analysed parameters are related to F0, jitter, shimmer and Harmonic Noise Ratio (HNR).

This is an all-embracing study that approaches voice and its relation/variation according to emotion. Three sources are considered: psychogenic voice pathology; emotion produced by actors; and spontaneous emotion analyses. Being a trailblazing research in this area, values were measured for all three types of production. The fact that this work only considers voice analysis without considering facial expression and body posture is also to be highlighted.

In order to make comparative studies with the data collected for each corpus (pathology, acted emotion and spontaneous emotion), the same analysis methods (Praat, SFS, SPSS, and Hoarseness Diagram - for pathological voice analysis; and Feeltrace system - for the spontaneous emotions) were used.

Studies and analyses related to acted emotion are complemented by perceptual tests with American English and European Portuguese speakers. These tests, as well as spontaneous emotion analysis, allowed the extraction of data for Portuguese. Both the expression and perception of emotion have many universal characteristics. However, the Portuguese language proved to have some peculiarities. Values obtained for neutral expression, sadness, and joy are very close, contrary to what happens in other languages. Moreover, these three emotions (from distinct families) are those that present the most difficulty (to both informant groups) in the distinction perceptual tests. This is probably the main peculiarity in the expression of emotion as far as Portuguese is concerned, and it may be due to cultural factors.

The study also shows that acted emotion is close to the expression of spontaneous emotion. However, some parameters record different values, because the actor tends to somewhat exaggerate the emotion.

This work led to the construction of original corpora that can be an important resource for future analyses in an area still in deficit in terms of scientific research for European Portuguese. Both corpora and the obtained results may be useful in areas such as Speech Science, Robotics and Education.

Keywords: Voice quality; Voice pathology; Emotion; European Portuguese

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