Features of Perception of Emotional Intonation in Short Pseudo-words and Intelligible Speech Utterances

Elena Dmitrieva*[1], Victor Gelman[2], Kira Zaitseva[1], and Alexandr Orlov[1]

[1]Sechenov Institute of Evolutionary Physiology and Biochemistry of the Russian Academy of Sciences – Russia

[2]Baltic Academy for Tourism and Entrepreneurship – Russia

Abstract

Affective prosody encompasses non-verbal aspects of language necessary for recognizing and conveying emotions in speech communication. The aim of the study was to comparatively examine the characteristics of perception of speech emotional prosody at different linguistic levels. The created corpus of speech signals of happy, angry, neutral emotional intonations contained two semantically neutral simple sentences and two bisyllabic pseudo-words (varying in one vowel phoneme only). The test stimuli were presented at random at noisy and noiseless conditions through the headphones to 43 listeners of 20-79 years old. Time and accuracy of recognition of emotional intonations were assessed. ANOVA showed that "noise level" and "type of emotion" were significant factors ($p < 0.01$) influencing in similar way the recognition parameters obtained for both types of speech material. Sentences' meaning did not influence the emotional perception ($p > 0.05$) while phonemic composition of pseudo-words had a significant effect ($p < 0.05$) on it. The set of acoustic characteristics underlying the perception of emotional prosody according to stepwise Discriminant Analysis appeared to be similar for speech utterances and pseudo-words, though the fundamental frequency variation (sd($F0$)) was the most significant under both noisy and noiseless conditions only for perception of pseuodo-words. The findings indicate that though, in the whole, recognition of speech emotional prosody has been found to be invariant with regard to linguistic level of stimuli, perception of emotional intonations at phonological and lexico-semantic levels has not only common features but also certain peculiarities. Support by grant RFH 10-06-00002.

*Speaker