Transplanting credibility into a foreign voice. An experiment on synthesized L2 Italian

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Our recent study on socio-cultural effects of foreign accent on communication effectiveness (De Meo et al. in press) revealed the relevance of auditory comprehensibility factors - such as disfluency, frequency of silences, pitch range variation, silent pauses, segmental errors - on message credibility. A hundred seventy-five native Italian listeners, after hearing a set of 10 news uttered in Italian by one native speaker of Italian and four non native speakers of L1 Chinese, Vietnamese, Arabic and Japanese, were asked to assess the comprehensibility, i. e. listener's estimation of difficulty in understanding an utterance (Munro & Derwing 1999), and the truthfulness of each news item. The four non native speakers, all late bilinguals with a basic (A2) and a mid (B1) level of competence as laid out in the Common European Framework of Reference, and an average stay time of 6 months, were chosen for the study on the basis of a global foreign accentness rating test administered to 70 male and female native Italian listeners. Listeners rated the degree of foreign accentness of a short read text on a 4-point scale (0 = native speaker; 3 = strong foreign accent). The results allowed to select four L2 speakers of Italian with a strong foreign accent.

Ten bizarre-but-true news from around the world read by the native speaker and the four non native speakers were presented to native listeners in form of radio news magazines, each combining the four voices reading different news, same news sequences but random voice order, pretending to administer a survey on media reliability, in order to avoid to focus the attention on foreign voices.

Obviously each single piece of news revealed to have its own degree of credibility, dependent on the textual content of the message, nevertheless results showed that, within the same text, ratings were significantly different depending on the auditory comprehensibility level. Results of perceptual tests were experimentally verified through spectro-acoustic analysis.

The study shows that up to 15% of listeners judge the heard utterance of "poor" comprehensibility, due to concomitant acoustic factors (disfluencies, errors, percentage of silence, tonal variation, etc.), the assessment of real/false is maintained around 50%, so in a range of randomness. Above the threshold of 15% the judgments of "false" increase rapidly, reaching 90% if the statement proves to be poorly understandable for 40% of listeners. There is a threshold of comprehension tolerance, i.e. a level of difficulty in understanding an utterance at which the listener's effort to understand the message leads him to believe that what he has just heard is not credible.

Following this line of research, our current study intends to experimentally verify the results of spectro-acoustic analysis through perceptual tests conducted on artificially modified speech, in order to qualitatively and quantitatively evaluate the role played by suprasegmental features and disfluences in the achievement of an L2 effective communication and find out if there is a relationship between the perceived degree of foreign accent and the communication effectiveness.

The ten news read by the four non native speakers will be artificially modified with software for voice signal treatment (Praat, Wave Surfer). Each single piece of news will be transplanted, so that segmental and prosodic features of the native speaker's utterance will be transferred onto the same utterance produced by the non-native speakers. The resulting corpus, consisting of

the 10 original utterances and the modified ones (1. Utterance with removed disfluencies, 2. Utterance with transplanted durations, 3. Utterance with transplanted intensity, 4. Utterance with transplanted pitch contour, 5. Utterance with transplanted silences).

Audio files will be presented in form of radio news magazines to native listeners, who will be requested to indicate on a form if each news item is auditory comprehensible, if it is true or not, and to indicate the perceived degree of foreign accent.

Results will be compared with those obtained from the previous experiments on natural language, in order to evaluate the role played by each single acoustic trait in improving comprehensibility, lowering the foreign accent, and increasing the credibility.

References

De Meo A., Pettorino M., Vitale M. "Non ti credo: i correlati acustici della credibilità in italiano L2", Proceedings of 11th Congress of the Italian Association of Applied Linguistics AItLA, in press.

Munro M. J. & Derwing T.M., Foreign accent, comprehensibility, and intelligibility in the speech of second language learners, in Language Learning 49, 1999, 285-310.

Pettorino M., De Meo A., Pellegrino E., Salvati L., Vitale M., "Accento straniero e credibilità del messaggio: un'analisi acustico-percettiva", in Proceedings of the 7th Congress of Italian Association of Speech Sciences AISV "Communicative context and variability in language production and perception", in press.