

## **One-year longitudinal study on teachers' voice parameters in secondary-school classrooms: Relationships with voice quality assessed by perceptual analysis and voice objective measures**

This longitudinal work explores the relationships between three analyses used for assessing teachers' voice use: the voice monitoring during lessons that describes the teachers' Vocal Behavior (VB), the perceptual assessment of voice by speech-language pathologists and the estimation of objective parameters from vocalizations to define teachers' Vocal Performance (VP).

About thirty Italian teachers from secondary schools were involved at the beginning and at the end of a school year. In each period, teachers' vocal activity was monitored using the Voice Care device, which acquires the voice signal through a contact microphone fixed at the neck to estimate sound pressure level, fundamental frequency and voicing time percentage. Once in each period, two speech-language pathologists performed a perceptual assessment of teachers' voice using the GIRBAS-scale. On that occasion, teachers vocalized a sustained vowel standing in front of a sound level meter in a quiet room. Jitter, Shimmer and other parameters were extracted using Praat, while a new metric of Cepstral-Peak-Prominance-Smoothed was estimated with a MATLAB script.

Several relationships between the outcomes of each analysis were investigated, e.g. statistical differences between the dimension "G" from GIRBAS-scale and objective measures for VB and VP, and correlations between objective measures and perceptual ratings were assessed.

Antonella Castellana, MSc, PhD Student, Department of Electronics and Telecommunications, Politecnico di Torino, Italy, +39/0110904073, antonella.castellana@polito.it

Giuseppina Emma Puglisi, PhD, Department of Energy, Politecnico di Torino, Italy, +39/ 0110904545, giuseppina.puglisi@polito.it

Giulia Calosso, MSc, Department of Energy, Politecnico di Torino, +390110904545, giulia.calosso@libero.it

Anna Accornero, SLP, Technical and Scientific Research, Department of Surgical Sciences, Università degli Studi di Torino, Italy, +39/0116336786, anna.accornero@unito.it

Lady Catherine Cantor Cutiva, PhD, Research Associate, Department of Communicative Sciences and Disorders, Michigan State University, Michigan, cantorcu@msu.edu

Fiammetta Fanari, SLP, Università degli Studi di Torino, Italy, +39/0116336786, 9fiammetta.fanari3@gmail.com

Franco Pellerey, PhD, Full Professor, Department of Mathematical Sciences, Politecnico di Torino, Italy, +39 0110907541, franco.pellerey@polito.it

Alessio Carullo, PhD, Associate Professor, Department of Electronics and Telecommunications, Politecnico di Torino, Italy, +39/0110904202, alessio.carullo@polito.it

Arianna Astolfi, PhD, Associate Professor, Department of Energy, Politecnico di Torino, Italy, +39/0110904496, arianna.astolfi@polito.it