

## Prosodic Characteristics of Post Traumatic Stress Disorder Induced Speech Changes

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**Abstract :** This abstract describes a promising approach for estimating post-traumatic stress disorder (PTSD) based on prosodic speech characteristics. It illustrates the validity of this method by briefly discussing results from an Arabic refugee sample (N= 47, 32 m, 15 f). A well-established standardized self-report scale "Reaction of Adolescents to Traumatic Stress" (RATS) was used to determine the ground truth level of PTSD. The speech material was prompted by telling about autobiographical related sadness inducing experiences (sampling rate 16 kHz, 8 bit resolution). In order to investigate PTSD-induced speech changes, a self-developed set of 136 prosodic speech features was extracted from the .wav files. This set was adapted to capture traumatization related speech phenomena. An artificial neural network (ANN) machine learning model was applied to determine the PTSD level and reached a correlation of  $r = .37$ . These results indicate that our classifiers can achieve similar results to those seen in speech-based stress research.

**Keywords :** speech prosody, PTSD, machine learning, feature extraction

**Conference Title :** ICPSI 2022 : International Conference on Psychophysiology, Stress and Illness

**Conference Location :** Bali, Indonesia

**Conference Dates :** October 20-21, 2022