



***Workshop:
Patient Centered (Health) Care Solutions***

**Voice-based Evaluation Method for Psychological Therapy
Effectiveness**

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Abstract

It remains a hard problem to determine if a patient has benefit from a psychiatric therapy or not. Questionnaires and the therapist's expertise are needed to determine this. However, both questionnaires and therapists can be manipulated especially by experienced patients. Direct physiological measures exist to determine the patient's tension and so forth. In practice these methods are not used in most cases due to their technical complexity and the inconvenience the patient may experience due to them.

This study examined the usefulness of voice-analysis for therapy evaluation. The variability of the fundamental frequency of the voice (SD F0) was used as an indirect measure of physiological arousal reflecting the intensity of emotions. The Subjective Unit of Distress (SUD) was used to assess

- (1) the success of the experimental manipulation of anxiety,
- (2) the subjective evaluation of the experienced emotions, and
- (3) the validity of the SD F0 as a stress-measure.

Twenty-five female participants suffering from a Panic Disorder with Agoraphobia participated in two experiments. One in which they relived experiences from the past. One in which they read a story aloud. Both experiments consisted of an anxiety triggering and a neutral condition, in which SD F0 and SUD were measured.

Accompanying changes in SUD and SD F0 indicated that the experimental manipulation of stress was successful. As expected, increases in SUD were accompanied by decreases in SD F0, validating the SD F0 as a stress-measure.

The SD F0 (in combination with the SUD) appears to be a useful and easy to integrate semi-automatized evaluation tool for measuring the intensity of emotions in clients with psychological disorders. It provides an objective quantitative measure for the effectivity of a treatment.

For example, in the first session of an effective treatment one should expect that the stress due to a trauma would be more severe than in the tenth session. In the tenth session the trauma and with that the stress accompanying it should be relieved. Using a simple memo-recorder or a PC with microphone, recordings can be made. The recordings of the first and tenth session can be compared using the proposed voice-analysis. In this way it can be determined if the therapy was effective.

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