

# Acoustic Characteristics of Distress Speech in Real Victims and Trained Actors

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A persistent question in forensic speech science concerns whether we are able to assess the psychological state of victims and other persons in audio recordings. Although practitioners are prohibited from conducting psychological assessments by IAFPA (IAFPA Code of Practice, 2004), instructing parties such as police officers and solicitors frequently ask whether audio recordings purporting to represent violent events are real or hoaxes, and also question whether and to what extent vocalisations occurring in 999 calls reflect real distress.

Previous studies investigating vocal correlates of (dis)stress have tended to focus on either laboratory induced stress (for ethical reasons this has usually been limited to physical or cognitive stress - e.g. Hicks, 1979, Jessen, 1996) or authentic psychological stress (e.g. Williams & Stevens, 1969; Kuroda et al., 1976), and typically found an increase in F0 mean and variability between baseline and control conditions, and mixed results for intensity. Such studies are insightful, but not always relevant to the forensic context. Furthermore, no systematic research has been undertaken to compare acted portrayals of distress to authentic representations of distress. This study builds on previous emotional speech research and its results will allow for a greater understanding of the acoustic characteristics of vocal responses made under both acted and authentic situations of extreme distress.

Recordings from six authentic criminal cases involving violent attack are compared with recordings from twelve trained actors. Using adapted 999 transcripts from the authentic cases as stimuli, actors were recorded live during a workshop under three conditions:

- 1) non-distress, i.e. baseline material from a reading passage;
- 2) 'unrehearsed' distress, i.e. material recorded at the beginning of the workshop without physical and mental warm up;
- 3) 'rehearsed' distress, i.e. material recorded at the end of the workshop after having undergone a series of physical and mental warm ups.

Recordings are analysed in Praat and parameters under investigation include F0 mean and variability, intensity, vowel formant frequencies F1, F2, F3 and formant bandwidth. Preliminary results show that intensity and formant bandwidth are two parameters on which acted performances can be differentiated from those of genuine victims; a decrease in intensity is found in the speech of the actors, and an increase in formant bandwidth is present in the productions from the victims. Results for F0 mean and range, and vowel formant measurements show that these parameters can be used to distinguish between baseline and distress conditions for actors and victims (where control recordings are available), but are not helpful as discriminating features between actors and victims. No significant change is observed in parameters between actors' 'rehearsed' and 'unrehearsed' distress conditions.

## References

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