



General Section – 2009

D36 Voice Stress Analysis: A Comparison of Layered Voice Analysis Instrumentation and Auditors' Judgments in Detecting Deception in a Field Setting

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After attending this presentation, attendees will learn if the truthfulness or deception of criminal suspects is detectable from audio-recorded interviews by instrumental or non-instrumental means.

This presentation will impact the forensic community by highlighting concerns about the use of voice stress analysis as a means of detecting deception for forensic and other purposes in the law enforcement community. In addition, what these findings suggest about the interpretation of research reports on voice stress analysis will be considered.

There are two points of information attendees should take from this presentation. First, it is possible to detect the "deception" of criminal suspects from audio-recorded interviews. Second, such auditory detection rates may exceed those obtainable with commercially available "voice stress analysis" devices. Attendees will learn that this latter point raises a concern regarding forensic and law enforcement use of such devices and of the value of some of the evidence advanced in favor of their use.

In this study, two highly experienced interviewers (serving as auditors) were provided with audio-recorded interviews (about 25 minutes in length) of 73 persons who were suspected of involvement in criminal events being investigated by a police agency. When evaluating the audio files each auditor rendered three decisions. First, after listening to the initial portion of each file, a decision of "truthful" or "deceptive" was made; this decision was based on the interviewee's responses in the first several minutes of the interview. Second, at the conclusion of the entire interview each auditor again rendered a decision of "truthful" or "deceptive" (auditors were asked to render only dichotomous decisions, that is, not to use "inconclusive" judgments as is sometimes the case in research of this nature). Following this latter decision, each auditor indicated the degree of confidence in the final decision. This was indicated on a 10-point scale, ranging from "1" no confidence to "10" almost certain. Statistical analyses were carried out using as dependent variables the auditors' truth/deception decisions and the confidence scores.

The sample of audio files used in this study was drawn from digital audio recordings of the pre-test interview segment of polygraph examinations. These interviews were collected by a police agency for the purpose of evaluating one of the commercially marketed voice stress analysis devices. Two persons employed by this police agency

underwent the standard "Level 1" 40-hour training program offered by promoters of the voice stress analysis device. Each of these persons carried out blind analysis of the audio files using the voice stress analysis device. The voice stress analysis device results were used to judge if the interviewee was "truthful," "deceptive," or "inconclusive." This latter result indicated that the voice stress analysis device was unable to render a definitive outcome.

The voice stress analysis device decisions and the judgments rendered by the two auditors of the interviews were compared to two different ground truth criteria. The first criterion was, as is common in such research, a confession which implicated a "guilty" person and, in some instances, exonerated an "innocent" person in the same case. The second criterion was the result (that is, the decision yielded by analysis of the polygraphic data) produced by one of two commercially available computerized scoring systems (algorithms). The result of these algorithms, of course, provided a criterion that was free of the influence of examiners' assessment of the polygraphic data.

The results to be reported include the accuracy of the auditors' and the voice stress analysis device decisions. Also, the relationship of the auditors' decisions to their confidence and to characteristics of the suspects and the cases will be considered. Finally, the discussion will highlight what these findings suggest about research reports which are said to support the effectiveness of voice stress analysis as a means of "lie detection."

Voice Stress, Deception, Police Interviews