

Cestaro, V. L. (1995). A Comparison Between Decision Accuracy Rates Obtained Using the Polygraph Instrument and the Computer Voice Stress Analyzer (CVSA) (Report No. DoDPI95-R-0002). Fort McClellan, AL: Department of Defense Polygraph Institute.

Cestaro (1995) tested the computer voice stress analyzer (CVSA) for its theoretical claim to identify the change of microtremors (i.e., wavering) in speech signals and its ability to detect changes in voice that might be related to deception. The CVSA is designed according to the theory that an increase in stress leads to a decrease in the magnitude of wavering in voice. So, assuming that deception causes stress and that stress indeed decreases the magnitude of wavering in voice, the CVSA is to identify the change of wavering in voice and could provide information whether or not a given individual is being truthful.

In the first experiment, stressed and unstressed voice responses were simulated by laboratory function generators, and the CVSA was tested for its ability to identify the change of wavering in speech signals. It was found that the CVSA outputs correctly indicated changes of wavering in speech signals, supporting the theoretical basis for the CVSA.

In the second experiment, Cestaro (1995) investigated whether or not the CVSA detects deception based on stressed-changes in voice. To do so, the accuracy of the CVSA was compared to the accuracy of the traditional polygraph method in the detection of deception. A total of 42 people participated in the experiment. They selected a number between 3 and 8. Then, in the questioning phase, they were instructed to lie about the number they chosen. Participants' responses were recorded for the CVSA, and the traditional polygraph instrument recorded changes in skin resistance, respiratory and cardiovascular activity. The main interest was whether or not the CVSA and/or the traditional polygraph method would provide information to identify the number that the participants selected. Four trained CVSA judges evaluated data from the CVSA, and four trained polygraph judges evaluated data from the traditional polygraph method.

The CVSA produced the overall accuracy of 38.7%, and it was not different from chance. By contrast, the traditional polygraph method produced the overall accuracy of 62.5%, and it was significantly better than chance. Thus, although the theoretical basis for the CVSA appeared to be valid, the actual performance of the CVSA in the detection of deception was not different than chance. Also, the CVSA was less accurate than the traditional polygraph method. It is possible that the experiment did not produce enough stress for the CVSA to detect any sign of deception. It might be useful to use the CVSA in conjunction with other methods to enhance the accuracy in the detection of deception.