

POLYGRAPH OR VOICE STRESS?

WHEN YOU KNOW THE FACTS, THE CHOICE IS CLEAR

<u>SOURCE</u>	<u>ACCURACY OF POLYGRAPH</u>	<u>ACCURACY OF VOICE ANALYSIS</u>	<u>SOURCE</u>
Barland, Gordon H University of Utah	95%	"Inappropriate for lie detection"	Brenner, Malcolm, Branscomb, Harvie, & Gary E Univ. Oregon, MIT and Yale
Bersh Philip J Temple University (Study for US Army)	92,4%	"Not an effective method for the determination of detection"	Commonwealth of Virginia, Report of the Dept of Commerce
Blum, Richard H & Osterloh, William Stanford University	96,2%	"At chance level"	Horvath, Frank, Michigan State University
Edel, Eugene C. & Jacoby, Jacob Study for US Government	95%	"Identical with chance"	Kubis, Joseph F., Fordham University study for US Army
Horvath, Frank S. & Reid, John E.	87,8%	"Not used in Military Law enforcement"	Link, Frederick C. US Army
Lahri, S.K. & Ganguly, A.K Government of India	90%	"Approximately chance"	Lynch, Brian e. & Henry, Donald R. Royal Ottawa Hospital, Canada
Podlesny, John A & Raskin, David C. University of Utah	94%	"Unreliable and invalid"	Nacheson, Israel, Bar Ilan University Study for Israeli Police
Raskin, David & Hare, Robert Univ. Of British Columbia	96%	"Insufficiently reliable"	National Security Agency, US Dept of Defence
Slowick, Stanley & Buckley, Joseph <u>Journal of Police Science and Administration</u> ,	87,2%	"Not above chance, not reliable or useful"	Suzuki, A Watanabe, S Takeno Y and Gosugi . Nat. Institute of Police Science, Tokyo Japan
Wicklander D & Hunter, F <u>Journal of Police Science and Administration</u>	92,5%	"Not above chance, not reliable or useful"	Suzuki, A Watanabe, S Takeno Y and Gosugi. Nat. Institute of Police Science, Tokyo Japan
Widackie, Jan & Horvath, Frank Jagolian Univ. Poland	95%	"Not useful"	US Airforce
		"Analysis is subjective and poorly understood. Primitive circuitry"	Vandercar, DH Greener, J Hibler, Spielberger, CD & Bloch Univ.

Tech Talk

Voice Stress Analysis Research Donald J. Krapohl

Various investigative techniques for detecting deception have appeared in the past 80 years. Some were developed by scientists and researchers, like reaction time tests, the polygraph, and brain wave methods. Others were proffered by manufacturers without the help of researchers, such as the B&W lie detector and the various voice stress devices. The most recent method being heralded as the new lie detector is the Computer Voice Stress Analyzer (CVSA). What separates the CVSA from previous voice stress methods is that the display is on a computer screen, versus on paper. There are no validated algorithms or scoring systems, or sophisticated analytical methods. These shortcomings have not prevented the manufacturer from making remarkable claims regarding the efficacy of its product. But, are they true? Those of us in the detection of deception profession would like to believe it, because switching to this new device would allow us to better serve our clients and agencies in a shorter time. Before we accept the self-endorsements of the manufacturer, it is best that we first look at what scientists have to say.

Below is a list of university-grade research studies that have investigated voice stress as a deception detection approach. Some studies looked at the CVSA device in particular, while others investigated whether voice stress analysis in general could be used to detect stress or deception. Copies of these studies can be obtained at many university libraries.

Brenner, M., Branscomb, H., & Schwartz, G. E. (1979). Psychological stress evaluator: Two tests of a vocal measure. *Psychophysiology*, 16(4), 351-357.

Conclusion: "Validity of the analysis for practical lie detection is questionable."

Cestaro, V.L. (1995). A Comparison Between Decision Accuracy Rates Obtained Using the Polygraph Instrument and the Computer Voice Stress Analyzer (CVSA) in the Absence of Jeopardy. (DoDPI95-R-0002). Fort McClellan, AL: Department of Defense Polygraph Institute.

Conclusion: Accuracy was not significantly greater than chance for the CVSA.

DoDPI Research Division Staff, Meyerhoff, J.L., Saviolakis, G.A., Koenig M.L., & Yourick, D.L. (In press). Physiological and Biochemical Measures of Stress Compared to Voice Stress Analysis Using the Computer Voice Stress Analyzer (CVSA). (DoDPI01-R-0001). Department of Defense Polygraph Institute.

Conclusion: Direct test of the CVSA against medical markers for stress (blood pressure, plasma ACTH, salivary cortisol) found that CVSA examiners could not detect known stress. This project was a collaborative effort with Walter Reed Army Institute of Research.

Fuller, B.F. (1984). Reliability and validity of an interval measure of vocal stress. *Psychological Medicine*, 14(1), 159-166

Conclusion: Validity of voice stress measures was poor.

Janniro, M. J., & Cestaro, V. L. (1996). Effectiveness of Detection of Deception Examinations Using the Computer Voice Stress Analyzer. (DoDPI95-P-0016). Fort McClellan, AL: Department of Defense Polygraph Institute. DTIC AD Number A318986.

Conclusion: Chance-level detection of deception using the CVSA as a voice stress device.

Hollien, H., Geison, L., & Hicks, J. W., Jr. (1987). Voice stress analysis and lie detection. *Journal of Forensic Sciences*, 32(2), 405-418.

Conclusions: Chance-level detection of stress. Chance-level detection of lies.

Horvath, F. S. (1978). An experimental comparison of the psychological stress evaluator and the galvanic skin response in detection of deception. *Journal of Applied Psychology*, 63(3), 338-344.

Conclusion: Chance-level detection of deception.

Horvath, F. S. (1979). Effect of different motivational instructions on detection of deception with the psychological stress evaluator and the galvanic skin response. *Journal of Applied Psychology*, 64(3, June), 323-330.

Conclusions: Voice stress did not detect deception greater than chance.

Kubis, J. F. (1973). Comparison of Voice Analysis and Polygraph As Lie Detection Procedures. (Technical Report No. LWL-CR-03B70, Contract DAAD05-72-C-0217). Aberdeen Proving Ground, MD: U.S. Army Land Warfare Laboratory.

Conclusion: Chance-level detection of deception for voice analysis.

Lynch, B. E., & Henry, D. R. (1979). A validity study of the psychological stress evaluator. *Canadian Journal of Behavioural Science*, 11(1), 89-94.

Conclusion: Chance level detection of stress using the voice.

O'Hair, D., Cody, M. J., & Behnke, R. R. (1985). Communication apprehension and vocal stress as indices of deception. The Western Journal of Speech Communication, 49, 286-300.

Conclusions: Only one subgroup showed a detection rate significantly better than chance, and it did so by the thinnest of margins. Use of questionable statistical methods in this study suggests the modest positive findings would not be replicated in other research. See next citation.

O'Hair, D., Cody, M. J., Wang, S., & Chao, E. Y. (1990). Vocal stress and deception detection among Chinese. Communication Quarterly, 38(2, Spring), 158ff.

Conclusion: Partial replication of above study. Vocal scores were not related to deception.

Suzuki, A., Watanabe, S., Takeno, Y., Kosugi, T., & Kasuya, T. (1973). Possibility of detecting deception by voice analysis. Reports of the National Research Institute of Police Science, 26(1, February), 62-66.

Conclusion: Voice measures were not reliable or useful.

Timm, H. W. (1983). The efficacy of the psychological stress evaluator in detecting deception. Journal of Police Science and Administration, 11(1), 62-68.

Conclusion: Chance-level detection of deception.

Waln, R. F., & Downey, R. G. (1987). Voice stress analysis: Use of telephone recordings. Journal of Business and Psychology, 1(4), 379-389.

Conclusions: Voice stress methodology did not show sufficient reliability to warrant its use as a selection procedure for employment.

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