

VSA History and Facts

(most text from Wikipedia's encyclopedia)

Approximately 2000 police and government agencies use the 'voice polygraph' technology as their primary lie-detection tool. Such agencies, more every year, are replacing the traditional 'wired' polygraph (and its often 'Inconclusive' results) with this more modern technology.

While there are many ways to 'beat' a traditional polygraph, including many methods promoted and sold on the Internet, there is nothing that can fool or beat voice lie-detection.

One method, developed during the Vietnam War, is a voice stress analyzer. Stress affects muscles controlling the voice, causing vocal tremors when someone lies. These tremors are subsonic components of voice and are not audible to humans. When the laryngeal muscle is relaxed, the pitch of these tremors is about 12 Hz. Stress causes the muscle to tense, causing the pitch to become as low as 8 Hz. This method is far easier to use than the polygraph, since it can be used on any voice recording. The FBI and CIA use voice stress analyzers in their investigations.

Voice Stress Analysis (VSA) is a newer technology than polygraph, yet it is as controversial. VSA technology records psycho-physiological stress responses that present in human voice, when a person suffers psychological stress in response to a stimulus (question) and where the consequences of lying may be dire for the subject being 'tested'.

VSA records an inaudible component of human voice, commonly referred to as the Lippold Tremor. When the 'Flight Or Fight' syndrome presents in a person, one of the psycho-physiological responses that manifest, is the involuntary tensing of the 'soft' striated muscles, particularly, the laryngeal muscles.

Under Normal circumstances, the laryngeal muscle is relaxed, producing recorded voice at approximately 12Hz. Under stress however, the tensed laryngeal muscle produces voice significantly lower than the subjects Norm Hz. The higher the stress, the lower down the Hz scale, voice waves are produced.

In the Detection Of Deception (DOD) scenario, the voice-stress produced in response to a Relevant (did you do it) Question is referred to as Deceptive Stress. Voice Stress Analysis is only applied as a type of lie detector. The technique's accuracy remains debated by polygraph-industry initiated research. There are independent research studies that support the use of VSA as a reliable Lie Detection technology. The skill and experience of the VSA Examiner is of utmost importance.

As with the polygraph, VSA technology is inert. It has no artificial intelligence component. It can be said that both technologies are equally reliable in determining a person's truthfulness under similar circumstances. Both technologies record data that they were designed to do. It is the use of that data as a means for Lie-Detection that remains controversial.

The primary use of VSA however is in the arena of 'Detection Of Deception'. In the past 10 years

VSA is used primarily in digital applications. VSA is distinctly different to LVA (Layered Voice Analysis). LVA is used to measure different components of voice, such as pitch and tone. LVA is available in the form of hand-held devices and software. LVA produces readings such as 'love', excitement, fear; which are not useful in DOD applications

The purpose of a VSA examination is to determine the truthfulness of responses made by an examinee regarding the subject under investigation. Determinations are made by analyzing and scoring the voice-grams produced by the examinee. Traditional analysis of voice grams was achieved by allocating 'percentages of stress (%) according to the patterns so produced. High levels of (deceptive) stress indicate that the examinee is deceptive as is the case with polygraph. In respect of VSA, squared voice grams indicates higher stress, whilst 'wave form' or 'domed' signatures indicate less stress. Questions may be posed to elicit simple "yes" or "no" answers, but can be posed to produce a narrative response. Questions are formulated for each individual being examined to compare situational stress signatures with Control Question and Relevant Question signatures, in order to identify (deceptive) 'stress signatures'.

VSA technology together with validated testing protocols, is designed to protect the innocent and avoid 'false positive' results. VSA is designed to assist any investigation by establishing the veracity of a subject's verbal responses.

Devices used to analyze voice stress are usually used in the presence of the individual under investigation; however, they can also be used without his or her knowledge. Since all that is needed is a voice, a wireless microphone, a telephone connection, or even a tape recording can provide the necessary input signal.

Traditional VSA differs from LVA as follows: VSA utilises the McQuiston-Ford algorithm and this is the technology developed in the USA for the US Defence Agencies and is used by US Law Enforcement agencies. There are no known physical countermeasures for VSA. Conversely, the simple use of a 'tack' placed under the tongue of the examinee, to be used as a countermeasure, can reduce the accuracy of polygraph results from 98% to 26%. (Ref: Honts 1993)

A great deal of voice stress testing (VSA) has been conducted. The Israeli intelligence community is often cited as a major user of this technology. In the United States, most States do not regulate the private use of these devices due to them being new to the market. However, the CIA and FBI both use VSA at times, in their own investigations. The technology is currently recognized in 43 States. The VSA referred to here is VSA and not LVA.

Many Intelligence Agencies as well as private Forensic-Psychophysicists worldwide utilise VSA in preference to polygraph technology. The original VSA technology was devised by three retired US Airforce personnel, amongst them a highly skilled software engineer. The three, Bell, McQuiston & Ford, developed the PSE 1000, an analogue machine. VSA was first devised for testing POW's during the Vietnam War. Later, Alan Bell of Dektor enterprises manufactured the PSE 2000, which was the last in line of the cumbersome VSA analogue machines.

In later years, the McQuiston-Ford algorithm was written into software for use on computers, giving birth to Digital Voice Stress Analysis. (DVSA) On 5th April 2007, the British Work and Pensions Secretary, John Hutton, announced that the technology would be used to identify benefit fraudsters. He was quoted as saying "This technology aims to tackle fraudsters while speeding up claims and

improving customer service for the honest majority." The suggested scheme will automatically alert staff of peaks in voice stress, which may lead them to ask for further substantiation. Claimants whose voice stress levels do not peak will be fast tracked through the claims system. The scheme will be piloted from May in north London's Harrow Council.

The McQuiston-Ford algorithm used for Voice Stress Analysis is reliably accurate. The recorded "micro tremors" in a persons voice are converted via the algorithm into a scorable voice gram. The discrepancy in researched accuracy may result from incorrectly trained or non-trained persons utilizing the technology incorrectly. This is evident by some Polygraphists trying to "test" VSA technology without having received accredited training in the use thereof.

Most 'polygraph only' associations have disputed the accuracy of VSA, although many accredited polygraphists have trained in the use of VSA and use VSA to good effect. The traditional analysis and scoring of voice-grams by means of assigning 'percentages' is clumsy and unreliable.

In 2005, Clifton Coetzee (Polygraph & VSA Instructor) devised a scoring method for voice grams incorporating the 'UTAH 7 Point' scoring system, as used by modern day polygraphists. Reactive or Responsive patterns are assigned a weighting of +3 to -3.

The use of CQT testing protocols developed by John Reid and Cleve Backster are used for greater reliability of VSA results. It is important that VSA examiners be skilled in the use of enforced, timed pauses between stimulus (question) and response (answer). As in the polygraph situation, the Flight or Fight syndrome has an onset delay, which must be considered by examiners to achieve reliable results.

The American Polygraph Association's website lists conclusions from multiple "university-grade studies" into the accuracy of voice stress analysis as a means of detecting the subject's truthfulness. All cast doubt on the validity of the results of such tests; many describe the results as no better than chance. The term "university-grade" is itself meaningless. While several articles come from peer reviewed journals, many others are research reports to or by government agencies which generally have no peer-review process. It should be noted that prior to an APA Annual Convention in 2000, many APA Polygraph Instructors were teaching VSA alongside polygraph. It might be that the huge success of VSA was perceived as a threat to the polygraph industry, which incidentally is a source of funding to the APA.

Voice lie detection, following a paralinguistic pre-test interview, is very accurate. The figures most often cited are in the 95% - 98% range. Accordingly, that this technology is rapidly replacing the polygraph at many law enforcement agencies. There are several independent and unbiased studies conducted regarding the accuracy of voice stress analysis. Each of them show the high accuracy of the voice lie detection.

Following the 9/11 attack on America, Congress provided President Bush with The Airport Security Federalization Act of 2001, which he signed into law. This includes the provision that airports will "provide for the use of Voice Stress Analysis or other technologies to prevent a person who might pose a danger to air safety from boarding the aircraft...". Congress and this provision further legitimized the use of voice stress analysis as a means of truth verification. No other type of lie-detection has received such a strong endorsement.

Comparing the two types of lie-detection: Some have compared polygraph as being like old-fashioned wired telephone lines and Voice Lie Detection as being like modern digital telephone service.

Many states have enacted legislation regulating the use of voice lie detection on persons without their express consent in advance, yet even further endorsing the validity of VSA.

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