

Use of Voice Changes in the Detection of Deception

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Abstract

Short-term voice changes from subjects in low-stress and high-stress lie-detection situations were visually displayed by a Psychological Stress Evaluator, model PSE-1. Low-stress subjects (n=16) picked one of five numbers, then answered "no" to all questions regarding which number they had picked. High-stress subjects (n=14) were criminal suspects undergoing polygraph examinations in which their verbal answers to the test questions were simultaneously tape recorded for analysis. Under the low-stress condition the detection rate was not significantly different from chance. Under the high-stress condition, using polygraph responses as the criterion for stress, voice changes were clearly able to distinguish between truth and deception. Using a numerical scoring technique with a +2 inconclusive range, the voice agreed with the polygraph in eight of 14 cases ($p < 0.01$), with the remaining six inconclusive. When inconclusives were restricted to scores of 0, there were 12 agreements ($p < 0.01$), one disagreement, and one inconclusive. Using ranks to compare the effectiveness of voice changes against the three individual components of the polygraph, it was found that the voice was the second most effective single parameter. It is hypothesized that a certain level of stress must be reached in the individual before changes in the voice occur; but once that level of stress is exceeded, differential changes in the voice can be used to determine deceptiveness.