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The validity of the Psychological Stress Evaluator (PSE) was tested in the detection of deception. The PSE is designed to capture imperceptible changes in voice that occur as a result of stress. The PSE processes taped-recording of vocal responses, and creates a display of vocal changes related to stress. Although the manufacture claims that the PSE is as accurate as the traditional polygraph method, evidence for the validity of the PSE is very mixed. In the present study, the PSE was tested and compared to the galvanic skin response (GSR) in the detection of deception. Also, the investigator examined the possible effect of wearing the blood pressure cuff on the accuracy of the PSE and the GSR, and the effect of the first trial vs. the second trial.

A total of 60 participants were assigned to one of the following 3 conditions: the tape-only condition, the tape-and-cuff with no inflation condition, and the tape-and-inflated-cuff condition. In the tape-only condition, only tape-recording was made for the PSE. In the tape-and-cuff with no inflation condition, participants wore the blood pressure cuff, but it was not inflated. In the tape-and-inflated-cuff condition, participants wore the blood pressure cuff, and it was inflated to measure the blood pressure. In all 3 conditions, tape-recording was made for the PSE, and in the tape-and-cuff with no inflation condition and the tape-and-inflated-cuff condition, the GSR was collected. In the study, participants chose a number from a set of 5 numbers. In an interview, they were to respond "no" to all questions regarding any numbers, including the one they chose (e.g., "Did you pick card number 13?"). In the second trial, the same set of questions was used, but it was presented to the participant in the reversed order of the first trial.

Two trained examiners evaluated the PSE outputs and the GSR data, and an additional independent examiner evaluated the GSR data. The accuracy rate based on the PSE was not better than the chance level of 20%. It was 24.2% for the first trial, and 20.8% for the second trial. There was no effect of the blood pressure cuff or the trial in the PSE data. By contrast, the accuracy rate based on the GSR was better than the chance level. It was 68.8% for the first trial, and 42.5% for the second trial. Furthermore, there was evidence for the effect of the blood pressure cuff and the trial sequence in the GSR data. A higher level of efficiency was found when the cuff was not inflated than when the cuff was inflated, and it was also true for the first trial than the second trial. Thus, the PSE did not produce the accuracy rate better than the chance level, and it did not respond to factors such as the presence of the cuff and the trial sequence. It might be the case that the present study did not create a sufficient amount of stress required for the PSE to produce reliable data. It would be crucial to determine a level of stress required for the PSE to maximize its accuracy rate.