Effects of Consistency Criterion for Scoring on the Reliability and the Validity of Polygraph Test for Crime Suspects*

범죄 용의자의 거짓말탐지검사의 신뢰도와 타당도에 대한 일관성 채점기준의 효과

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Abstract

For scoring polygraph charts, the Prosecutors’ Office of the Republic of Korea uses a consistency criterion in which an elevated signal on one physiological channel is scored as a deceptive response only if the signal is also elevated on other channels. In the current study, the effects of this scoring criterion on reliability and accuracy (validity) of polygraph scores were assessed. Polygraph tests on 26 suspects were evaluated twice by the same examiners. The examiners used the consistency criterion in the first evaluation. In the second evaluation, the examiners were prevented from using the criterion; the signals from each physiological channel were separated and randomly arranged before they were rescored by the same examiner. Reliability was assessed by the variation among the scores for each suspect. Accuracy was assessed by establishing a standard, based on a Latent Class Analysis model, using the results of polygraph tests on each of 182 additional suspects. Reliability and accuracy were both improved by the use of the consistency criterion which therefore was recommended.

Keywords: Polygraph, Comparison Question Test, Scoring criterion, Consistency

요 약

현재 한국에서는 거짓말탐지검사의 채점과정에서 ‘일관성’ 기준을 사용하고 있다. 본 연구에서는 현재 한국에서 사용하고 있는 거짓말탐지검사 기법의 채점 기준 중 ‘일관성’ 기준의 실증적 타당성을 검증하고자 하였다. 구체적으로는 한국에서 이루어지고 있는 거짓말탐지검사의 채점과정에서 ‘일관성’을 실제로 고려하고 있는지의 여부를 검증한 후 ‘일관성’을 고려하여 채점하는 경우와 그렇지 않은 경우에서 거짓말탐지검사 결과의 신뢰도(Cronbach’a)와 정확성이 어떻게 달라지는지를 파악하였다. 본 연구는 실제 현장에서 ‘일관성’을 고려하여 채점한 원채점자료와 ‘일관성’을 고려하지 않도록 가공하여 채점한 실험채점자료를 분석하였다. 원채점자료와 실험채점자료는 동일한 검사관들이 채점하도록 하였다. 그 결과 현재 한국에서는 거짓말탐지검사의

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A polygraph test for lie detection involves a scoring procedure which is undertaken by trained experts. Although the scoring procedure is standardized with a detailed set of criteria, the application of the criteria relies rather heavily on subjective judgments of the scorer. In addition to the standard set of scoring criteria, which was developed by the Department of Defense Polygraph Institute (DoDPI) of the United States, the Prosecutors’ Office of the Republic of Korea uses a “consistency criterion” (CC) for scoring polygraph charts obtained with Comparison Question Test (CQT). According to the CC, an elevated signal from one physiological channel is scored as a lie response only if the signals from other channels are also elevated.

The CC is specifically applied in the following fashion. Each examinee is tested three times repeatedly with an identical set of two relevant and three comparison questions, yielding three charts of signals emanating from four physiological channels. The signals corresponding to each of the relevant questions are the spots to be scored, resulting in 12 scoring spots for each relevant question. Suppose that the signal at a scoring spot corresponding to the first relevant question is consistent with the DoDPI criteria for a lie response. This spot can be scored as a lie response only if at least 8 of the remaining 11 scoring spots corresponding to the same relevant question are also consistent with the DoDPI criteria for lie responses.

The CC is considered to help reduce the false positive decision errors. In addition to the telling of a lie, signals from physiological channels can be elevated by a host of random factors. If a signal from one physiological channel is elevated by a lie then similarly elevated signals may emanate from other channels if the polygraph test is internally consistent. Therefore, the CC is believed to help prevent misinterpretations that are caused by extraneous factors. This rationale for the CC is supported if two conditions are met: (1) telling a lie elevates signals from all physiological channels simultaneously and consistently; (2) extraneous factors such as normal test anxiety, body movement, and sensor slippage affect physiological signals in a random fashion elevating some signals sometimes. If the former condition is not met, the application of the CC may inflate the rate of false negatives, erroneously judging a deceptive examinee to be truthful. If the latter condition is not met, it may inflate the rate of false positives, erroneously judging a truthful examinee to be deceptive. Whether the two conditions are truly met in the application of polygraph tests to criminal investigations is unknown.

The CC can also affect the reliability of the polygraph scores. In practice, the CQT is usually conducted at least three times with an identical set of questions. The CC can enhance the test-retest reliability of the polygraph test by making the scores on the successive tests more dependent on one another. On the other hand, it is well known that physiological responses tend to be reduced when an organism is stimulated repeatedly. If the examinee tells a lie consistently, the strength of the signals may become weaker or less stable on later test due to physiological adaptation. Increased instability of

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