



An Effective Strategy for Improving Single-Issue Screening Examinations

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Most polygraph examinations in the United States are screening examinations rather than being associated with specific known issues, allegations, or problems. These screenings are commonly used to assess individuals' truthfulness and credibility, often before they are entrusted with critical roles or responsibilities, usually in the public safety realm. While these polygraph tests aim not to investigate or uncover information about any incident of wrongdoing, they provide valuable insights into an individual's general reliability and integrity. Through analysis of physiological responses, polygraph examiners attempt to determine the likelihood of deception. By utilizing advanced technology and established methodologies, these examinations assist organizations in making well-informed decisions when selecting employees, candidates, or collaborators who will be involved in sensitive realms such as national security, law enforcement, or private investigations. Effective polygraph approaches

strive to ensure that only individuals with the highest standards of trust and accountability are chosen for these pivotal roles. Polygraph examinations remain an indispensable tool for many entities as they augment the decision-making processes and uphold standards of integrity. This reliable credibility assessment method strengthens the foundations of organizations and raises the level of reliability and credibility that is essential in today's complex and sensitive environments.

Polygraph program managers are often confronted with the complex task of managing unresolved polygraph examinations. These situations arise when the polygraph results show significant reactions likely indicative of deception or when the outcomes are inconclusive - where test results do not reach minimum thresholds of passing or failing the examination. Handling these unresolved cases poses a challenge to decision-making and a significant burden on the resources



dedicated to the vetting process. This burden manifests itself in various ways, including the allocation of additional person-hours, the expenditure of additional funds, and the challenge of managing limited facilities. Managing unresolved polygraph examinations requires attention to detail, comprehensive analysis, and effective process decision-making.

Polygraph programs worldwide would greatly benefit from a more efficient and effective method – one rooted in empiricism. This method could enhance accuracy, reduce error rates & inconclusive results, and differentiate between truthful and deceptive examinees more successfully. The ultimate goal is to develop a comprehensive framework that offers detailed, nuanced, and in-depth insights into the complex dynamics involved in identifying deception and truth in the screening environment. By employing empirical methods, programs could achieve a level of sophistication that improve the screening process noticeably, all while offering more reliable and valid outcomes.

When polygraph programs are faced with the need for single-issue screening, they would typically utilize the Federal You Phase technique, a single-issue examination with two relevant questions that address the same relevant screening topic with slightly different renderings of each relevant question. This technique is traditionally used in diagnostic settings with a known issue, allegation, or problem, such as in the criminal use of polygraph examinations.

One solution that offered an alternative to the Federal You Phase and the Federal ZCT was proposed by Nelson, Handler,

Oelrich & Cushman (2014, *Polygraph*, 43,4). They suggested that the question sequences between that and the Air Force Modified General Question Test technique (AF-MGQT) could effectively replace the Federal You Phase and the Federal ZCT in event-specific (including single-issue) testing. The proposed technique replicated the question sequence's structure by removing the two symptomatic questions.

Krapohl, Grubin, Benson & Morris (2020, *Polygraph and Forensic Credibility Assessment*, 49, 2) succinctly described the vital role of single-issue screening and the need for an effective solution in dealing with them to resolve more screening cases. They identified an absence in the polygraph literature of polygraph techniques that could effectively be utilized to meet single-issue screening demands. As a result, they proposed the British One-Issue Screening Test technique, which is precisely structured like the AF-MGQT Version 1, for two relevant questions. Its question sequence is virtually identical to the Federal You Phase sans symptomatic questions.

The authors here offer another solution that would address the single-issue screening need in a simple, effective, and arguably more powerful manner. The Utah CQT has two formats, a 3-relevant question, and a 4-relevant question format. These formats have been used to address event-specific or single-issue examination needs. With 4-relevant questions, the latter approach has been demonstrated to be among the most potent approaches to single-issue and event-specific testing. This format is virtually identical in structure and sequence to



the AF-MGQT version 2, 4-relevant question approach (APA Meta-analytic review, Polygraph 40,4; Handler, 2006, *Polygraph* 35,3; Handler & Nelson, 2009, *Polygraph* 38,1).

Empirically, this approach can improve multiple aspects of test performance. These encompass enhanced sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), reduced inconclusive results, and overall accuracy. Moreover, the inclusion of inconclusive results as an aspect of test performance assessment further underscores the comprehensive nature of this approach. Overall, using this method yields a significantly increased accuracy in evaluating and interpreting test results, ensuring more precise and informed decisions regarding the presence or absence of the target condition. In addition

to these benefits, implementing this approach can lead to a more streamlined and efficient testing process. With its ability to enhance sensitivity and specificity, inconclusive results can be minimized, providing a more decisive outcome for examinees undergoing testing. This can save valuable time and reduce the need for additional tests or unnecessary background interventions. Furthermore, by improving the positive predictive value (PPV) and negative predictive value (NPV), this approach dramatically enhances confidence in the accuracy of test results. The higher PPV ensures that when the test identifies a positive result, it is highly likely to be a true positive, minimizing the chance of unnecessary follow-up procedures. Similarly, the higher NPV provides reassurance when a negative result is obtained, largely ruling out the presence of the target condition.

Table 1

	Utah 4 RQ/ESS	Federal You-Phase/ESS
Unweighted accuracy %	94.4	90.4
Unweighted INC %	3.1	19.2
Sensitivity %	92.3	84.5
Specificity %	90.8	75.7
FN %	4.6	3.4
FP %	6.2	13.8
D INC %	3.1	12.8
T INC %	3.1	25.5
PPV %	93.8	86
NPV %	95.2	95.7
D Correct %	95.2	96.1
T Correct %	93.7	84.6

The result of gathering significantly more physiological data using the four-relevant question technique, coupled with the Two-Stage-Rule (TSR), leads to more

precision, less inconclusive results, and increased sensitivity, specificity, PPV, and NPV.



Thiel & Nelson (2019, *Polygraph and Forensic Credibility Assessment*, 49,2) reported an informative case study at a sizeable sexual offender treatment program demonstrating the value of using the proposed four-relevant question approach. Historically, this program utilized a Federal You Phase for their single-issue needs. After carefully analyzing a potentially more effective approach, they implemented the four-relevant question approach. As a result of carrying out this approach for single-issue testing,

predictably, they reported a significant reduction of inconclusive results by 55%. Additionally, they observed a significant reduction of 46% in the number of exams that produced insufficient data where no opinion could be reached.

We hope this alternative view of yet another way to approach a single-issue screening test is interesting. We would encourage field examiners to consider trying this.

