

Backster Polygraph Techniques and the APA Standards of Practice

Raymond Nelson

Abstract

Supporting evidence is reviewed regarding the family of polygraph techniques developed by Cleve Backster, including the Backster You-Phase technique, Backster SKY test, and Backster Exploratory test. Evidence is reviewed with consideration for the requirements of the American Polygraph Association regarding the conduct and reporting of polygraph research evidence for criterion accuracy, reliability, normative data for use with error estimation. Application of the Backster techniques is described for both diagnostic and screening contexts. Recommendations are made for future research and policies regarding test accuracy.

Introduction

The American Polygraph Association (APA, 2012) has defined a polygraph test as consisting of a pretest interview, test data collection phase and test data analysis phase, with the assumption that each of these phases has an important impact on test accuracy, which is dependent upon both test data acquisition and test data analysis. The APA standards of practice require that beginning January 1, 2012 all APA members should conduct field examinations using only validated polygraph testing techniques. The APA has defined a polygraph technique as the combination of: 1) a test question format that conforms to evidence-based principles for target selection, test question construction, and test administration, and 2) a test data analysis method for which there is a published description of the physiological features, transformations, decision rules and normative data. The APA has declared that polygraph techniques should conform to established boundary requirements of 90%, 86% and 80% decision accuracy for evidentiary, paired testing, and investigative use, and accuracy that is significantly greater than chance for polygraph screening tests. The APA has further determined that validation evidence should consist of published evidence from research conducted in accordance with the APA's research standards (APA, 2011a). APA research standards, in addition to establishing ethical parameters for polygraph research, specify that published validation evidence must minimally include calculations of both reliability and criterion validity, including test

sensitivity, test specificity, false positive and false-negative error rates, and inconclusive rates for criterion deceptive and criterion truthful groups.

Backster Techniques

The family of comparison question techniques (CQTs) developed by Cleve Backster includes the Backster SKY (suspect, knowledge, you) test, the Backster Exploratory test, and the Backster You-Phase technique (Backster, 1963; Matte, 1996). Although the three Backster test question sequences may seem to exist as three different test formats, these tests are intended to be used together. The Backster You-Phase technique serves as core of the technique while the Backster SKY test and Backster Exploratory test serve as accessory or adjunct testing techniques. These tests were developed as modifications of the original comparison question technique described by John Reid (1947).

Similarities between the comparison question technique initially developed by Reid and those developed by Backster involve the use of a structured series of relevant, comparison and other question types, and an attempt to evaluate or locate the strongest source of response variance evoked by the comparison questions (CQs) or relevant questions (RQs). Differences between the Backster and Reid techniques are several and include the procedures and rules for target selection, question formulation, and numerical scoring. The most observable difference between the comparison technique described by Reid and that developed by

Backster is that the questions of the Backster You-Phase technique will address a single issue of concern with no attempt to evaluate differences in the role or level of involvement of the examinee. In other words, the Backster you-phase technique imposes the assumption that the criterion variance of the target questions is non-independent. Other notable differences are that the Backster technique includes CQs immediately before and immediately after each RQ, whereas the former method had the CQs presented to the examinee after the RQs. The Backster test question sequence is consistent with the best practice recommendations of Krapohl (2006).

Backster You-Phase technique

The Backster You-Phase technique includes two RQs in a test question sequence, each presented to the examinee during a minimum of two test charts. RQs are paraphrases of each other and are interpreted with the assumption that the criterion variance of the two questions is non-independent, representing a single target issue. Test data from Backster You-Phase exams, and all exams, should always be evaluated globally for tracing purity and artifacts. Results of Backster You-Phase exams should be evaluated numerically using the Backster numerical scoring system (Backster, 1963, Backster School of Lie Detection, 2011; Matte, 1996; Weaver, 1980). Grand total scores from Backster You-Phase exams are compared to cutscores of +5 or -9 for two test charts, and +7 or -13 for three test charts with an inconclusive range between these pairs of cutscores. Categorical decisions are made when the grand total score equals or exceeds established cutscores which can be mapped statistically to the distributions of deceptive and truthful scores of published normative samples.

While all test results are ultimately probability statements that include both confidence and error rates, categorical decisions are the final interpretation or translation of physiological data and numerical scores into human language. Categorical decisions are expressed by field examiners as *deception indicated* (DI) or *no deception indicated* (NDI) for diagnostic tests, and *significant reactions* (SR) or *no significant reactions* (NSR) for screening exams. These

categorical test results are sometimes simplistically interpreted by consumers of polygraph results as indicative that the examinee has *passed* or *failed* the examination or has told the *truth* or *lied* to the examination questions.

Because the Backster You-Phase exam is used to investigate a single issue of concern, subtotal scores (question scores) are not used when interpreting the results of these examinations. Single issue polygraph techniques are often used for event-specific diagnostic exams of known or alleged problems, and can also be used for screening tests, in the absence of any known or alleged problem, when the test target is limited to a single behavioral issue.

The Backster You-Phase technique can be utilized with or without the Backster SKY test and with or without the Backster Exploratory test. When the Backster SKY test is used, it is conducted prior to the formulation of the RQs for the Backster You-Phase technique. Similarly, the Backster Exploratory is conducted prior to the formulation of the examination questions for the Backster You-Phase technique. To maintain high levels of test accuracy, categorical examination results should only be based on the numerical scores obtained using the Backster You-Phase technique regardless of whether or not the Backster SKY test or Backster Exploratory test are used.

Backster SKY test

The Backster SKY test is a form of multi-facet polygraph technique, in that the purpose of the test is to gain insight into the examinee's role or level of involvement in a reported crime. Questions included in the Backster SKY test involve: 1) the examinee's suspicion regarding the identity of the guilty suspect of a reported crime, 2) the examinee's factual knowledge regarding the identity of the guilty suspect, and 3) the examinee's direct involvement and guilt regarding the reported crime. Backster SKY test questions can also address any other direct or indirect level of involvement that would serve as useful to the development of effective target questions for a Backster You-Phase exam. The RQs of the Backster SKY test are presented in sequence with CQs and other procedural questions.

RQs of Backster SKY tests are not rotated or randomized in the question sequence when multiple Backster SKY charts are conducted. Because the stimulus questions describe different roles or levels of involvement, results of the Backster SKY test are interpreted with the assumption of independent criterion variance among the RQs. Although previously used at the end of the question sequence for the Backster You-Phase technique, the Backster SKY test is presently recommended as a separate test chart. It is recommended that the Backster SKY test be conducted with two test charts, though a minimum of one test chart can be used.

The Backster SKY test can be evaluated using the Backster numerical scoring system, by summing the component scores for each presentation of each test stimulus question, and then combining the sum scores to achieve a subtotal (question score) for each independent question. Fixed numerical cutscores are used with the Backster SKY test, and the results are used only to make an initial subjective determination of the examinee's level of involvement in the issue of concern, and only for the purpose of determining the behavioral focus of the RQs of a subsequent Backster You-Phase or Backster Exploratory exam. As an alternative to numerical analysis, the Backster SKY test can be evaluated in a global manner, by visually identifying the test questions' locus of the largest or most significant reactions. Backster SKY test questions can be scored numerically at a later time if categorical results are to be included in a written report. Regardless of how it is evaluated, results from the Backster SKY test *should not be used alone* to make categorical decisions regarding the final test result. Results from the Backster SKY test are intended only to assist the examiner in selecting the most advantageous way to develop the relevant questions of the Backster You-Phase technique. In this way, the results of the Backster SKY test can be used during the initial stages of a successive hurdles testing strategy.

Backster Exploratory test

The Backster Exploratory technique is intended to serve the needs of field testing circumstances in which a multiple issue or

multi-facet examination is desired. Multiple issue testing formats are commonly used in screening contexts, in the absence of any known problem (allegation or incident), when it is useful to broaden the sensitivity of the test to a wider range of behavioral issues. Multiple issue examinations can also be used during the initial stages of investigation of known or alleged incidents. Regardless of whether used in screening or investigative contexts, the results of Backster Exploratory examinations *should not be used* to make categorical decisions regarding the final test result. There is little justification for the use of multiple issue examination techniques as a basis for a categorical decision regarding a reported crime or known allegation for which diagnostic accuracy is an important concern. Instead the results of Backster Exploratory exams should be used in a successive hurdles testing model, in which the results of the multiple issue exam will be further investigated with the Backster You-Phase technique. Statistical calculations of the confidence and error levels of the examination results should always be based on the Backster You-Phase technique.

The Backster Exploratory test should be conducted with a minimum of two test charts, and the test results should be evaluated numerically using the Backster numerical scoring system. Backster Exploratory exams should be interpreted with the assumption that the criterion variance of the RQs is independent. In practical terms this means that numerical subtotal scores are calculated by summing all scores for all presentations of each individual RQ. Question scores (subtotal scores) are then compared to cutscores of +3 and -5 for two test charts and +4 and -7 for three test charts, with an inconclusive range between these pairs of cutscores. These cutscores are not based on published normative data, and are used procedurally to assist examiners in the reporting of test results. Scores of Backster Exploratory exams are not summed to a grand total score, and there is no cutscore for use with the grand total score when interpreting Backster Exploratory exams.

When question scores of a Backster Exploratory test produce one or more question scores with a negative sign value, a You-Phase exam should be conducted using the question

target that produced the lowest (furthest from zero) negative score. When all question scores of a Backster Exploratory test produce question scores that are all equal to or above zero, a You-Phase exam should be conducted using the question target that produced the lowest (closest to zero) score.

Validity of the Backster Technique

Reliability of the Backster technique has been described by Honts, Hodes and Raskin (1985) who reported a correlation coefficient of $r = .88$ for numerical scores and a moderate to high rate of decision agreement ($\kappa = .48$, pairwise agreement = $.95$) for the three categorical decisions (DI, NDI, INC) of the two participating scorers who evaluated a sample of You-Phase examinations ($N = 24$) conducted in a laboratory experiment. Nelson, Handler, Adams and Backster (2012) also reported a moderate to high correlation coefficient of $r = .57$ for numerical scores obtained using the Backster numerical scoring system when seven examiners of widely varied experience evaluated a sample of confirmed field cases ($N = 22$) conducted with the You-Phase technique.

Criterion validity of the Backster family of polygraph techniques rests on multiple published studies on the Backster You-Phase test (Honts & Hodes, 1983; Honts, Hodes & Raskin, 1985; Meiron, Krapohl, & Ashkenazi, 2008; Nelson, 2012; Nelson, Handler, Adams & Backster, 2012). The Backster You-Phase technique was shown in a recently published meta-analysis on validated polygraph techniques (APA, 2011b) to produce mean criterion accuracy level of $.86$ ($.79$ to $.93$), that was significantly greater than chance. Mean accuracy for all polygraph techniques included in the meta-analysis was reported as $.87$ ($.80$ to $.94$). Meta-analytic mean and standard deviation statistics for the Backster You-Phase technique were included in the recent publication, along with statistical calculations of test sensitivity, test specificity, false-negative and false-positive error rates and inconclusive rates for criterion deceptive and criterion truthful cases. From these normative statistics, error estimates can be calculated for individual cases using Bayesian condition models or inferential statistical methods.

Conclusions

The Backster You-Phase technique satisfies all of the requirements for validity within the requirements set forth by the APA (2012), including published descriptions of a test question format that conforms to validated principles for target selection, test question construction, and test administration, along with a test data analysis method for which there exists a published description of the physiological features, transformations, decision rules and normative data. Validity of the Backster SKY technique and Backster Exploratory technique remains a secondary concern in that these techniques are not intended to be used independently of the Backster You-Phase technique, from which all statistical estimates of confidence and testing error should be calculated. Criterion accuracy of the Backster techniques is essentially equivalent to that of other validated polygraph techniques, though some advantages may be enjoyed by field examiners who are trained to make use of the Backster SKY and Backster Exploratory techniques.

Limitations of the available published evidence include the small number of publications regarding the Backster You-Phase techniques (a condition not unique to the Backster family of techniques), and the use of small samples of somewhat unknown representativeness and generalizability. Additional limitations include the lack of published evidence and normative data regarding the Backster SKY test and Backster Exploratory techniques, though these formats were not intended to be independent of the Backster You-Phase technique.

Continued research and continued interest in the Backster family of polygraph techniques is indicated, including the Backster You-Phase, SKY and Exploratory techniques. When used in accordance with their design and validation, these techniques permit the field examiner to provide evidence-based classifications of deception or truth-telling, including norm-referenced calculations of potential error and confidence levels, in both event-specific diagnostic and multiple issue screening contexts.

None of the techniques included in the recently published meta-analysis (APA, 2011)

produced results that were significantly different from others, aside from statistical outliers that may be attributable to identified research confounds. Therefore, claims of the superiority of any presently available polygraph technique are not supported by evidence. Indeed, the arbitrary APA boundary requirements for 90%, 86% and 80% decision accuracy represent a sub-optimal, confusing and potentially misleading way of categorizing the accuracy rates of available polygraph

techniques. An additional need for caution exists in that emphasis on single metric or mean estimates of criterion accuracy may lead to overestimation or naïve assumptions about polygraph accuracy. Conservative scientific judgment requires that more emphasis is placed on the lower limit of the confidence interval when discussing and reporting polygraph accuracy, especially when enacting policy decisions regarding the accuracy of polygraph examination results.

References

- American Polygraph Association (2011a). Research Standards for APA Publications. Approved by the Board of Directors of the American Polygraph Association on March 11, 2011. [Electronic version] Retrieved January 6, 2012, from <http://www.polygraph.org>.
- American Polygraph Association (2011b). Meta-analytic survey of criterion accuracy of validated polygraph techniques. *Polygraph*, 40(4), 196-305.
- American Polygraph Association (2012). By-laws: American Polygraph Association, effective 1-1-2012. [Electronic version] Retrieved January 6, 2012, from <http://www.polygraph.org>.
- Backster School of Lie Detection (2011). *Basic polygraph examiner's course chart interpretation notebook*. Backster School of Lie Detection: San Diego.
- Backster, C. (1963). Standardized polygraph notepack and technique guide: Backster zone comparison technique. Cleve Backster: New York.
- Honts, C. R. & Hodes, R. L. (1983). The detection of physical countermeasures. *Polygraph*, 12, 7-17.
- Honts, C. R., Hodes, R. L. & Raskin, D.C. (1985). Effects of physical countermeasures on the physiological detection of deception. *Journal of Applied Psychology*, 70, 177-187.
- Krapohl, D. J. (2006). Validated polygraph techniques. *Polygraph*, 35(3), 149-155.
- Matte, J.A. (1996). *Forensic Psychophysiology Using the Polygraph*. Williamsville, NY: J.A.M. Publications: New York.
- Meiron, E., Krapohl, D. J. & Ashkenazi, T. (2008). An assessment of the Backster "Either-Or" Rule in polygraph scoring. *Polygraph*, 37, 240-249.
- Nelson, R. (2012). Monte Carlo Study of Criterion Validity of Backster You-Phase Examinations. *Polygraph*, 41(1), 44-53.
- Nelson, R., Handler, M., Adams, G. & Backster, C. (2012). Survey of reliability and criterion validity of Backster numerical scores of You-Phase exams from confirmed field investigations. *Polygraph*, 41(2), 127-135.
- Reid, J. E. (1947). A revised questioning technique in lie detection tests. *Journal of Criminal Law and Criminology*, 37, 542-547.
- Weaver, R. S. (1980). The numerical evaluation of polygraph charts: Evolution and comparison of three major systems. *Polygraph*, 9, 94-108.