

DEBATE

CONCERNING EFFECTIVENESS OF EXCLUSIVE VS. NON-EXCLUSIVE CONTROL QUESTIONS IN POLYGRAPH EXAMINATIONS

Background history concerning this debate which led to this critique, response and rebuttal.

Title: Matte Critique, Horvath Response, and Matte Rebuttal to Response of Critique of Laboratory Study on Effectiveness of Exclusive v. Non-Exclusive Control Questions in Polygraph Examinations.

In July 2008, a laboratory study entitled “Effect of Two Types of Control Questions and Two Question Formats on the Outcomes of Polygraph Examinations” authored by Frank Horvath and John J. Palmatier was published in the *Journal of Forensic Science*, Volume 53, No. 4. Doi: 10.1111/j.1556-4029.2008.00775.x. This study concluded that non-exclusive control questions produced greater accuracy than exclusive control questions on both innocent and guilty subjects.

In the Sep-Oct 2008 Research Review, American Polygraph Association Magazine, L. Rovner authored an article regarding the Horvath-Palmatier Laboratory Study and concluded that “we should now abandon the now outdated idea of time bars and use nonexclusive control/comparison questions whenever we run a test using a ZCT or MGQT format.”

In April 2011 a 26-page critique of the Horvath-Palmatier laboratory study authored by J. A. Matte was submitted to the *Journal of Forensic Science* (JFS) for publication and was returned by the Editor advising that the critique could only be submitted for publication as a Letter-to-the-Editor without the exhaustive references contained in the critique, Matte duly complied and submitted the Letter as a Commentary on the Horvath-Palmatier Laboratory Study on 1 May 2011 to JFS.

On 25 June 2011, Matte was notified by the editor of JFS that his Commentary had been accepted for publication in the *Journal of Forensic Science* with an attached response from Horvath, primary author of the laboratory study. Hence both the Matte Commentary and Horvath’s Response can be found in the *Journal of Forensic Science*, Volume 56, Nr.6, November 2011, available at: [http://onlinelibrary.wiley.com/journal/10.1111\(ISSN\)1556-4029](http://onlinelibrary.wiley.com/journal/10.1111(ISSN)1556-4029).

On 6 July 2011, Matte was advised that JFS rules did not permit submission and acceptance of a Rebuttal to Horvath’s Response. Therefore the much needed Rebuttal has been published in *Supplement 2002-2012 to Forensic Psychophysiology Using The Polygraph* and at www.mattepolygraph.com under the heading of Debate on Effectiveness of the Exclusive v. Non-Exclusive Control Questions in psychophysiological veracity (PV) examinations.

The rebuttal specifically addresses those areas of Horvath’s response most notable and relevant to the debate on the effectiveness of the two types of control questions in a manner that recapitulates the essential elements of the debate.

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Set forth below is the Unabridged Critique entitled “Critique of Horvath-Palmatier Laboratory Study on the Effectiveness of Exclusive vs. Non-Exclusive Control Questions in Polygraph Examinations” by James Allan Matte, followed by the Rebuttal to the Horvath Response. The abridged version of this thesis was published as a Commentary in a Letter-to-the-Editor, Journal of Forensic Sciences, Volume 56, Number 6, November 2011, available at: [http://onlinelibrary.wiley.com/journal/10.1111/\(ISSN\)1556-4029](http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1556-4029)

Critique of Horvath-Palmatier Laboratory Study on Effectiveness of Exclusive vs. Non-Exclusive Control Questions in Polygraph Examinations.

James Allan Matte

ABSTRACT: The Horvath-Palmatier laboratory study (JFS 2008: 53-4) concluded that the accuracy of the Exclusive Control Question and Non-Exclusive Control Question in the identification of guilty examinees were not statistically significant (80% and 85% respectively). However, the difference in accuracy between Exclusive and Non-exclusive control questions in the identification of innocent examinees was statistically significant (45% and 91% respectively). A critical analysis of the Horvath-Palmatier study reveals a serious lack of understanding regarding the psychological structure and theoretical concept of the Backster Zone Comparison Technique. This is reflected by the test structure and question format of the Zone Comparison test used in the Horvath-Palmatier study and their failure to employ Backster’s “Either-Or” rule which comprises the nucleus of the Backster ZCT for which the Exclusive Control Question was designed to enable. Recent published research revealed that the Backster ZCT’s overall accuracy was significantly reduced when its “Either-Or” rule was excluded.

KEYWORDS: Forensic science, polygraph, exclusive control question, non-exclusive control question, Backster Zone Comparison Technique, Reid Control Question Technique, Modified General Question Test, Either-Or rule, psychological set, non-current exclusive control question, current exclusive control question.

BACKGROUND:

In order to understand the reasons for the failure of the Horvath-Palmatier [23] study to accurately evaluate the effectiveness of the Exclusive and Non-Exclusive Control Questions, it is imperative that the significant differences in the psychological structure and theoretical concept of the polygraph techniques for which these two types of control questions were designed to be used be fully explained.

The non-exclusive control question was first introduced in a publication [45] authored by John E. Reid for use in what became known as the Reid Control Question Technique. It was

considered a major breakthrough in the field of forensic psychophysiology¹. The Reid Technique used two reviewed control questions for comparison with usually four relevant questions dealing with the same crime but not the same issue. The crime questions included direct involvement, indirect involvement and guilty knowledge, hence a multifaceted test. The reviewed control questions were in the same crime or offense category as the crime or matter for which the examinee was being tested. Reid's reviewed control questions were all-encompassing in that they included the period in which the crime was committed, i. e. "Did you ever steal anything in your life"

In 1960, Cleve Backster, former Director of the Keeler Polygraph Institute, developed the Backster Zone Comparison Technique. Backster's technique was a significant departure from the Keeler and Reid techniques for several reasons. Backster introduced reviewed probable-lie questions that used time bars to exclude the period in which the crime generating the test was committed. Hence Backster's control questions were named Exclusive control questions versus Reid's control questions which were labeled non-exclusive control questions. By design, the time bars created control questions structurally less intense than the relevant (crime) questions against which they were to be compared, although they are presented to the examinee as being of equal importance to the outcome of the test. Backster also used only two relevant questions, which dealt with the same relevant act of the crime, but were worded differently. Hence if the examinee was lying to one of the relevant questions, he would also be lying to the second relevant question. These two relevant questions were flanked by three exclusive control questions for comparison. These control questions would each encompass a different age category and would start with different wording so that the examinee would not be startled by the apparent repetition of a question (Figure 1). Furthermore, these differences in each of the three exclusive control questions are intended to inhibit or delay habituation and retain the strength of their stimuli which are designed to be structurally less intense than the relevant questions in order to avoid inconclusive results from guilty examinees. It should be noted that the exclusive control questions which Backster labeled as the Green Zone are separated in time from the

Figure 1

BACKSTER ZCT STRUCTURE

14	Neutral, Irrelevant Question
25	Symptomatic Question
39	Preparatory/Sacrifice Relevant Question
46	Non-Current Exclusive Control Question
33	Relevant Question
47	Non-Current Exclusive Control Question
35	Relevant Question
48	Non-Current Exclusive Control Question
26	Symptomatic Question

¹ The American Society for Testing and Materials (ASTM) established the controlling standards for Forensic Psychophysiology, a title which it enacted for the discipline of psychophysiological veracity examinations using the polygraph.

relevant questions labeled as the Red Zone by at least one to as many as seven years, depending on the age of the examinee, legal statute of limitations, length of employment, etc. However some polygraphists/agencies have modified the exclusive control question by eliminating the time separation and excluding only the offense in question, i.e. “Not connected with this case...” This modification hampers the clear separation of the control and relevant test questions because it includes other crimes up to the day of the polygraph examination and renders the control questions of equal if not greater strength and threat than the relevant questions, in violation of the psychological structure of the Backster ZCT. Therefore in order to differentiate between the traditional Backster exclusive control questions and its modified version, this author [31] labeled the former as a Non-Current Exclusive Control Question, and the latter as Current Exclusive Control Question.

Backster also introduced a Sacrifice Relevant Question which acts as a safeguard in that it allows for dissipation of excessive general nervous tension or undue anxiety prior to the asking of the primary relevant questions. It is structured as an orienting relevant question specifically related to the single issue covered by the two relevant questions. Therefore it serves as both a sacrifice relevant question which may elicit an emotionally induced sympathetic response and as a preparatory question for the introduction of the two direct relevant questions, hence a dual-purpose question. Backster further developed and introduced two Symptomatic questions into his test structure to determine if an outside issue was bothering the examinee and interfering with the examinee’s *psychological set*² [8, 36] also known as *selective attention*. The Backster Zone Comparison test structure as shown in Figure 2, places a control question on both sides of the two relevant questions. No other test question is inserted between the control and relevant questions in order not to disrupt the flow of the examinee’s *psychological set* on the relevant questions if guilty which would enable dampening of neighboring control questions or the exclusive control questions if innocent which would enable dampening of neighboring relevant questions. The two Symptomatic questions as seen in Figure 1 are positioned in a manner that encases and frames the control and relevant questions, with the first symptomatic question preceding the first comparison question and the second Symptomatic question serving as the last test question with orienting value. This allows those examinees who relieve on the last test question to relieve on the Symptomatic question rather than the preceding control or relevant question that are used for a determination of truth or deception.

However, the Exclusive Control Question serves another important role in that it enables the “Either-Or” rule that forms the nucleus of the Backster Zone Comparison Technique.³

The “Either-Or” rule must be applied in the evaluation, interpretation and scoring of the physiological data collected from the examinee. According to the “Either-Or” rule, a significant reaction should be present in either the red zone or the green zone but not to both. If the red zone indicated a lack of reaction, it should be compared with the neighboring green zone containing

² Psychological set: Also known as *selective attention*, it is an adaptive psychophysiological response to fears, anxieties, and apprehensions with a selective focus on the particular issue or situation that presents the greatest threat to the legitimate security of the examinee while filtering out lesser threats. (Matte, 2000).

³ The Quadri-Track Zone Comparison Technique, a derivative of the Backster ZCT, also uses non-current exclusive control questions and the “Either-Or” rule on a non-selective basis.

the larger timely reaction. If the red zone indicates a timely and significant reaction it should be compared with the neighboring green zone containing no reaction or the least reaction. A timely and significant reaction to both the red and green zone questions being intercompared indicates a serious question defect in green zone question. In effect, that green zone question is deemed to be defective, therefore the significantly reactive relevant question is then compared to the other neighboring green zone question that should have little or no reaction if functioning as designed.

Unlike other polygraph techniques that use a fixed scoring threshold to arrive at a determination of truth or deception, the Backster ZCT⁴ uses an increasing threshold with the conduct of each polygraph chart. Furthermore, the score threshold for the truthful is significantly lower than the threshold for the guilty due to its less intense structure, e.g.. Truthful: +3 for 1 chart; +5 for 2 charts; +7 for 3 charts, versus Guilty: -5 for 1 chart; -9 for 2 charts, -13 for 3 charts. A minimum of 2 charts must be collected to make a determination of truth or deception.

During the past three decades, several modifications have been made to the Backster ZCT, most notably by the Federal government that resulted in a Federal Zone Comparison Technique [12, 28, 52], and the Utah Zone Comparison Technique developed at the University of Utah [10, 44] that bears little resemblance to the Backster ZCT. Unfortunately, a hybrid of the Federal and Utah ZCT rather than the Backster ZCT was used by Horvath & Palmatier⁵ to test the effectiveness and accuracy of the Exclusive control question versus the Non-Exclusive control question. This is unfortunate because the Exclusive control question developed and designed by Backster as a Non-Current Exclusive Control question was specifically intended to enable the “Either-Or” rule which was not implemented in the Horvath & Palmatier study. Furthermore, other departures from the Backster ZCT’s psychological test structure were noted which would have an adverse impact on the effectiveness of the Exclusive control questions and the accuracy of the Zone Comparison test used in the Horvath-Palmatier study, which are discussed below.

Horvath & Palmatier Lab Study:

1. Horvath-Palmatier failed to implement the “Either-Or” rule in the evaluation, interpretation and scoring of the physiological data collected in Zone Comparison Tests.

Field Research by Meiron, Krapohl, Ashkenazi [41] revealed that the overall accuracy of the Backster Zone Comparison Technique employing its “Either-Or” rule and non-current exclusive control questions attained an accuracy of 80% with 17% inconclusives and 3% errors. However when the “Either-Or” rule was not applied, the accuracy of decisions for deceptive cases was only 55%, and the overall accuracy was significantly decreased to 70% and its inconclusives increased to 27% with 3% errors

2. Horvath-Palmatier used the same introduction wording and age category for each of the exclusive control questions. The Backster ZCT uses different age category and introductory wording to retain anxiety level and delay habituation to the exclusive control questions.

⁴ The Quadri-Track Zone Comparison Technique also uses an increasing score threshold with a comparatively lower threshold for the truthful than the deceptive examinee [27].

⁵ Dr. Frank Horvath is a former staff member of John E. Reid and Associates, Chicago, Illinois.

3. Horvath-Palmatier used excessive time bars that seriously weakened the exclusive control question, e.g. “if a subject were 20 years old an Exclusive control question would begin as ‘Before the age of 17...’”

The younger the examinee, the less time separation between the relevant and control questions is available, hence in the above scenario, the proper time frame for the exclusive control question would be “Before the age of 19...” which would have the effect of a stronger non-current exclusive control question.

4. Horvath-Palmatier used a “mixed question” test as the last test, in violation of the Backster ZCT test format and protocol. The Backster ZCT rotates the position of the two relevant questions with each succeeding chart conducted for comparison with each of the non-current exclusive control questions. However there is no random mixing of the test questions.

5. Horvath-Palmatier used an Irrelevant question between a Relevant and Control question, thus interrupting the flow of the examinee’s psychological set, in violation of the Backster ZCT test format and protocol.

6. Horvath-Palmatier used a fixed scoring threshold of ± 6 in the scoring of the physiological data to arrive at a determination of truth or deception. The Backster ZCT uses an increasing score threshold with the conduct of each addition charts. Furthermore, the Backster ZCT uses a lower threshold for the Truthful (+3, +5, +7) versus the Deceptive examinee (-5, -7, -9), in recognition of the structurally less intense non-current exclusive control questions.

7. Horvath-Palmatier used a relevant test question as the last question on the test, in violation of the Backster ZCT test format and protocol. The last test question must not be used for a determination of truth or deception inasmuch as the examinee may relieve on the last test question. Therefore, Backster ZCT uses a second Symptomatic question having orienting value as the last test question.

8. Horvath-Palmatier used a sacrifice relevant question that was broad and lacked specificity as required by the Backster ZCT format and protocol. Should have been worded: Regarding whether or not you stole the envelope containing \$3.00 from Dr. Horvath’s mail slot in Baker Hall: Do you intend to answer truthfully each question about that?

9. Horvath-Palmatier used three relevant questions in violation of the Backster ZCT format and protocol. A third relevant question has the effect of distributing the reactivity of the relevant questions amongst the three of them thereby reducing their individual responsivity [29], rather than a stronger focus on two relevant questions of similar content. Furthermore, in the Backster ZCT format, the three structurally less intense exclusive control questions are better able to cope with two rather than three strong relevant questions. In addition, the “Either-Or” rule requires that the two relevant questions be flanked by non-current exclusive control questions on either side in order to provide a second neighboring non-current exclusive control question to compare with in the event that the first non-current exclusive control question is deemed defective.

10. Horvath-Palmatier used a cuff pressure between 40 mm/Hg and 55 mm/Hg which produces cardiograph responses significantly weaker than cuff pressure of 70mm/Hg and higher. Barland [11] reported that a cuff pressure at 90mm/Hg, and a mean arterial blood pressure of 100 mm/Hg before reaction which increases to 120 mm/Hg during reaction will show a difference in pulse amplitude of 200% whereas a cuff pressure at 60 mm/Hg and a mean arterial blood pressure of 100 mm/Hg during reaction will show a difference in pulse amplitude of only 50%.

Furthermore, cuff pressure of 70 mm/Hg or more may divert the examinee's attention from his or her breathing to the cuff pressure. The redirected attention away from one's breathing could produce potentially truer, uncontrolled respiratory patterns. In several field studies, respiration was shown to have equal diagnostic value, and in some field studies greater diagnostic value than its neighboring parameters [13, 16, 17, 38, 42, 48]. An experimental scoring technique proposed and tested by Jayne [26] also supported the pneumograph as providing the most diagnostic information. Furthermore, a study by Elaad, Bonwitt, Eisenberg, Meytes [18] revealed that respiration was the only one of the three parameters not affected by beta blockers. Elaad, et al, concluded that "respiration seemed to improve the overall detection rate especially because skin resistance responses have the quality of rapid habituation."

11. Horvath-Palmatier had both the testing examiner and blind evaluator "scored and accumulated in their total scores, the values assigned to each of the two pneumograph tracings." Averaging the scores from the two pneumograph tracings diminishes the contribution of scores to the overall tally of scores from the other tracings. This procedure is contrary to Backster Zone Comparison Technique procedure. The Backster ZCT employs the most productive pneumograph tracing, and its scores are added to the overall tally.

12. Horvath-Palmatier used a Modified General Question Test (MGQT) format to test the effectiveness of two (2) Non-Exclusive control questions against five (5) relevant questions. Within this format that originated from the Reid Technique, a Stimulation Test was administered as the second chart after the first relevant test had been conducted. It is well known and documented [21, 22, 43] that in spite of the claim that both relevant and control questions are reviewed with the examinee between charts, the emphasis is clearly on the non-exclusive control questions. This is a manipulation of the examinee's psychological set towards the non-exclusive control questions, which has been severely criticized by Abrams [1, 2, 3], Matte [31, 32] and Matte & Reuss [39]. This also devalues the scientific comparison of the two types of control questions. The collection of the data must not be interrupted with any language that would influence the examinee's psychological set towards the control or relevant questions [34].

Amsel Field Study (Cited by Horvath-Palmatier):

Horvath-Palmatier cited Amsel's [5] field study to support their findings that the non-exclusive control questions were more effective than the exclusive control questions. However they failed to mention a critical analysis of Amsel's comparative study by Matte & Backster [35] which nullifies the results of his study. The following discrepancies were noted:

1. Amsel failed to implement the “Either-Or” rule in the evaluation, interpretation and scoring of the physiological data collected in Zone Comparison tests.

2. Amsel used the three-position scale rather than the seven-position scale in scoring the physiological data collected. Use of the three-position scale does not differentiate between a subtle reaction and a dramatic reaction. Blackwell’s [12] field study found “the PDD examiners mean level of accuracy was 75.7% and 66.3% for the 7- and 3- position scoring scales, respectively.” Blackwell stated that “without exception, the overall level of accuracy generated by the examinee when using the 7-position scoring scale was higher than when using the 3-position scoring scale. The same was true when looking at the overall percentages for either the innocent examinations or the guilty examinations.”

Furthermore, Capps and Ansley [14], van Herk [49], and Krapohl [27] found that the accuracy of the 7- and 3- position scales depended on the threshold used. The Backster and Matte Zone Comparison Techniques use an increasing threshold, whereas other Zone Comparison Technique modifications (DACA, Utah) employ a fixed threshold. Amsel used a fixed score threshold.

3. Amsel used current exclusive comparison questions that excluded only the specific instant crime, but not other crimes committed during that same period.

4. Amsel used a Sacrifice Relevant Question (SRQ) that violated the Backster concept and purpose of the Sacrifice Relevant question in that it covered both the control and relevant test questions. The Backster ZCT is designed to identify with preciseness the specific issue covered by all of the relevant questions included in its single-issue test, and those relevant questions must cover only one and the same act. Hence the examinee, whether guilty or innocent of the instant offense, will perceive the Sacrifice Relevant question as the first relevant test question dealing with the specific issue under investigation. The SRQ used by Amsel does not act as the first relevant question dealing with the specific issue under investigation, hence the innocent examinee is only afforded the first relevant question to vent his or her possible anxiety regarding the instant offense. Furthermore, the Backster SRQ also acts as a preparatory question for the introduction of the relevant questions, to direct the guilty examinee’s psychological set onto the relevant questions.

5. The test structure used by Amsel in his field study used a control question as the last question in its test sequence, whereas the Backster ZCT uses a Symptomatic question. The danger of employing a test question that is used for comparison as the last test question is that the examinee may relieve on the last test question regardless of its nature. This could have the effect of degrading the effectiveness of that control question.

6. Amsel’s research methodology did not attempt to determine the error rate. Furthermore he selected only the first three charts for evaluation, although some tests had as many as five charts, which may have created an artificial inconclusive rate. Without an error rate for each type of test, it is impossible to determine which technique or control question used within the technique is superior. It could be argued that the technique that employed the non-current exclusive control question with an inconclusive rate of 10% had no errors while the

technique that employed the non-exclusive control question with an inconclusive rate of only 5% could have had an error rate of 15%. Amsel admitted that by using only the first three charts “I created a new situation in where the scoring of the tests that had 4 – 5 charts now totaled a figure that moved the outcome from a conclusive results to an inconclusive result.” I submit that it could also have had an opposite effect.

7. Amsel failed to use Symptomatic questions as required in the Backster Zone Comparison Technique that are designed to identify the presence of an outside issue that may be interfering with the examinee’s psychological set on the relevant or control questions.

8. Amsel administered a Stimulation Test as the second test, following the first relevant test. This procedure historically used in the Reid and Arther Techniques, can produce adverse effects on the innocent examinee who may wonder why this test presented as a sensitivity test is now being administered after the first relevant test. This procedure can raise the examinee’s suspicion that he did not do well on his first test, thus redirecting his psychological set onto the relevant questions. The Backster ZCT and Matte Quadri-Track ZCT [30, 33, 37] administer the Stimulation Test as the first test or chart so that each succeeding test will have been subjected to the same influence.

Conclusion:

The Horvath & Palmatier laboratory study fails to present a persuasive scientific argument on the merits of the non-exclusive versus the exclusive control questions. Aside from the significant discrepancies found in the Horvath & Palmatier laboratory study and the Amsel field study cited by them in support of their conclusions, the Horvath & Palmatier study suffers from a very basic defect in that it is a laboratory study that employs mock paradigms that suffer the absence of serious consequences to the deceptive examinee and a total absence of the fear of error by the innocent examinee which in real-life can result in a false positive (an innocent examinee misdiagnosed as deceptive). Furthermore, laboratory studies are based on non-emotional responses generated by the offer of a reward such as additional college credits or a small sum of money, usually about twenty dollars, and/or by a desire for increased self-esteem if they can defeat the test. Responses in laboratory studies have thus been classified as orienting responses. [15, 19, 20, 49, 51]

Additionally, the potential for anger is absent due to the fact that the examinee is a volunteer in a mock crime paradigm. Furthermore guilty examinees are not motivated to employ countermeasures. For the non-truthful examinee in the analog study, the potential for embarrassment or punishment if found deceptive to the relevant questions is nonexistent. The subject sample is not representative of the diverse population that includes the criminal element present in field cases. Therefore, laboratory studies which are based on non-emotional orienting responses absolutely fail to replicate the field conditions that elicit emotional defensive responses wherein both the guilty and innocent examinee’s primary emotion is “fear” of the consequences [4], if found deceptive which in criminal cases could result in imprisonment. The argument that laboratory studies offer complete control over subjects used in their study such as the assignment to deceptive and non-deceptive groups and the holding of variables constant in order to study the variable of interest, is useful in supporting the results of examinations involving non-emotional

subjects role playing in a mock crime. However its results cannot be applied to field situations nor can they be used to validate the use of a polygraph technique or its various components on real suspects of crimes whose results pose a serious threat to the security of the examinee. [40]

Interestingly, Horvath [24] in a previously published laboratory study discussed the merits of laboratory studies which he stated “must be interpreted with some caution. These data were collected in a laboratory environment where motivational and other differences may make it unlikely that the results can be generalized to real-life testing situations. Of course, this caveat would apply to all laboratory studies and indeed there are some who maintain that results in that environment should not ever be extended to actual testing situations.”

A recently published study authored by Matte [40] presents convincing evidence that psychophysiological veracity examinations using the polygraph to detect lies and verify the truth, which include its psychological test structure components, should be validated by field research studies, and laboratory studies should be confined to recognition tests such as the Concealed Information Test or the Guilty Knowledge Test.

A research review published by the American Polygraph Association [47] regarding the Horvath-Palmatier laboratory study concluded that “we should now abandon the now outdated idea of time bars and use nonexclusive control/comparison questions whenever we run a test using a ZCT or MGQT format.” This statement and conclusion based on a seriously flawed laboratory study that cited a field study with similar fatal flaws is not only misleading but can have serious consequences for polygraphists in the field. Hopefully, this critique will enlighten and educate polygraphists and researchers regarding the different psychological aspects of the exclusive and non-exclusive control (comparison) questions and their individual usefulness within the techniques in which they were designed to be implemented..

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MATTE REBUTTAL TO RESPONSE FROM HORVATH

Rebuttal by J. A. Matte to Response by F. Horvath regarding J. A. Matte's Critique of the Horvath-Palmatier Laboratory Study on the Effectiveness of the Exclusive v. Non-Exclusive Control Questions in Polygraph Examination, published in *Journal of Forensic Sciences*, Vol. 53, Nr. 4, 2008. The Matte Rebuttal set forth below incorporates the salient points of Horvath's response to Matte's critique of the Horvath-Palmatier laboratory study cited above. The unabridged response by Horvath was published along with Matte's Letter-to-the-Editor Critique in the *Journal of Forensic Sciences*, Volume 56, Issue Number 6, November 2011. The original unabridged critique and rebuttal by Matte is also available at www.mattepolygraph.com. It must be noted that the rules of the *Journal of Forensic Sciences* do not permit the acceptance and publication of a rebuttal to a response from the original authors to a critique of their study, hence its publication on this website and in forthcoming Supplement 2002-2012 to *Forensic Psychophysiology Using The Polygraph*.

The first author (Horvath) begins his response by noting for the record that he is not nor has ever claimed to be a graduate of the Reid College, nor is he now or has ever been a staff

member of that college. He further noted for the record that he “was however employed in various positions not related to that ‘college’ at John E. Reid and Associates, Chicago.” A review of John E. Reid and Fred E. Inbau’s 1966 textbook titled “Truth and Deception: The Polygraph (“Lie-Detector”) Technique [26], which was used at the Reid College, revealed on Page 266 and again on Page 278 photographs of Frank S. Horvath, identified as a polygraph examiner on the staff of John E. Reid and Associates. It is a reasonable assumption that as a polygraph examiner for Reid and Associates, Horvath would have employed a polygraph technique that used the Reid non-exclusive control question, which has been the focus of some of his research. (Horvath 1988 [5], 1991[6] and 2008 [8]).

Horvath states that “this method (BacksterZCT) is merely one of many variations of the most frequently administered polygraph testing procedure in the U. S., what is generically known as the Comparison (“control”) Question Technique (CQT). While it is common to find that variations in the CQT are identified by the name of a person who made an alteration in the testing protocol, in principle, they all function in roughly the same way.” This statement suggests that the Backster ZCT is a derivative of some other technique when in fact it is the first technique that employed non-current exclusive control questions, symptomatic questions and a standardized numerical scoring system of chart interpretation from which other techniques were developed with various modifications, some of which significantly altered the psychological structure of the Backster ZCT which relies on its “Either-Or” rule supported by the non-current exclusive control questions. Horvath dismisses the importance of the “Either-Or” rule stating that “This rule has never been reported to be of value in any peer-reviewed scientific journal. In the paper on that topic to which Matte refers, the only published assessment available, the findings showed something quite different from what he reports. In that paper, the BZCT testing that was carried out using the “either-or” rule did not produce an outcome that was significantly different from what was obtained by a different testing method that didn’t employ that rule. Matte’s statement about what was reported in that paper is misleading.”

Quite the contrary, there were two field studies published in peer-reviewed journals regarding the effectiveness of the “Either-Or” rule, namely “A field Study of the Backster Zone Comparison Technique’s Either-Or Rule and Scoring System Versus two other Scoring Systems When Relevant Question Elicits Strong Response,” Matte, 2010 [11], *European Polygraph*. The results of this field study comprising 123 cases representing 270 polygraph charts averaged 2.2 charts per case. Two false negatives would have occurred using the Greatest Reaction Control (GRC) and the GRC produced the greatest number of Inconclusives at 35.3%. The comparison of the relevant questions with the control question that elicited the least or no reaction in accordance with the “Either-Or” rule produced the least number of Inconclusives (12.1%) and with no errors. The results of this field research study supports Backster’s “Either-Or” Rule of comparison of the relevant question that elicits a strong reaction with the control question that elicits the least or no reaction, and refutes the contention that its practice makes the Backster Zone Comparison Technique biased against the innocent examinee.

The second field study cited in Matte’s critique is “An Assessment of the Backster “Either-Or” Rule in Polygraph Scoring” by Eldad Meiron, Dolnald J. Krapohl and Tzachi Ashkenazi. *Polygraph*, 2008 [23]. In referring to this study, Horvath stated that “the BZCT testing that was carried out using the “either-or” rule did not produce an outcome that was

significantly different from what was obtained by a different testing method that didn't employ that rule. Matte' statement about what was reported in that paper is misleading." Horvath misses the point, which is that when the Backster ZCT is administered **without** the "Either'Or" rule, the results show a significant decrease in accuracy. Page 244 of cited study reflects: "It can be seen at the above figure that the percentage of cases in which all three examiners correctly decided was lower in the Backster (no EOR) method (59%) and higher both in the Backster (EOR) (70%) and the Federal method (73%) who achieved similar results. It can be seen that the Backster (No EOR) method has a relatively high percentage of cases in which none of the three examiners correctly decided (16%)." "Analysis showed the following: Backster (EOR) scoring method is significantly more accurate than Backster (no EOR) method ($p < 0.05$ in Binomial distribution)." "Focusing only in the deceptive cases one can see larger differences between the scoring methods. In contrast to a relatively lower percentage of cases in which all three examiners decided correctly using Backster (no EOR) method (42%), one can see a relatively high percent of cases in which all three examiners decided correctly using Backster (EOR) method (68%)." This data is consistent with the data from the aforesaid (Matte 2010 [11]) field study. The Meiron, et al study conducted a significance analysis "using either Sign Test or the Binomial distribution (in cases of small N or many ties). Analysis showed the following: (1) Backster (EOR) scoring method is significantly more accurate than Backster (No EOR) method ($P < 0.05$ in Binomial distribution); (2) The Federal scoring method is significantly more accurate than Backster (No EOR) method ($p < 0.05$ in Binomial distribution), and: (3) The federal scoring method is not significantly different in accuracy than Backster (EOR) method ($p < 0.05$ in Binomial distribution).

The above two field research studies leave no doubt about the significant difference the "Either-Or" Rule makes when it is omitted from the Backster ZCT. Horvath makes the point that there is no significant difference between the Backster method with its Either-Or Rule and the Federal Method, but ignores the most important issue of this debate which is the fact that his laboratory study tested the effectiveness of Backster's non-current exclusive control question without its related "Either-Or" rule in formats (CQT and MGQT) that were not designed to accommodate its effective use, as indicated in paragraphs numbered 1 thru 12 of the Matte Critique which Horvath failed to specifically address. Horvath stated that he chose not to employ the Backster ZCT format because "there isn't a single empirical study in the scientific literature in which that procedure has been used as Matte described it." In fact the two aforesaid field studies (Matte 2010 [11]; Meiron, et al 2008 [23]) used the Backster ZCT format as I described it, inasmuch as the Backster ZCT is standardized and deviations are not permitted. Nonetheless, whether there are empirical studies in the scientific literature or not is not relevant inasmuch as the Horvath-Palmatier laboratory study was suppose to test the effectiveness of the exclusive v. the non-exclusive control questions, hence the exclusive control questions should have been tested in the format in which it was designed to be used by its developer (Backster) in concert with the utilization of its related "Either-Or" Rule. Instead, the exclusive control question was tested under conditions that violated standard Backster ZCT procedures listed in the 12 points set forth in the Matte Critique.

Horvath states that the point made in the critique about the review and emphasis on the control questions between charts has no relevance to what was reported in his Horvath-Palmatier lab study. He states that "Like the other points made in the Matte critique it is simply a personal

comment, in this case, made up out of thin air and without any foundation in regard to our study.” Horvath fails to understand that this author (Matte) was only allowed to submit his critique as a letter to the editor which limited his critique and precluded lengthy references. Nevertheless, in response to Horvath’s comment, Stanley Abrams authored “A Response to Honts on the Issue of the Discussion of Questions Between Charts” published in *Polygraph*, 1999 [1]; and “The Directed Lie Control Question” published in *Polygraph*, 1991 [2]. Also Matte, J. A. & Reuss, R. M., “Validation of Potential Response Elements in the Directed-Lie Control Question” published in *Polygraph*, 1999 [22]. Matte, J. A., “An Analysis of the Psychodynamics of the Directed Lie Control Question in the Control Question Technique. *Polygraph*, 1998 [17]. All of the aforementioned publications indicate that the review of control questions between charts is a recipe for false negatives. The review of the control questions between the collection of the polygraph charts stimulates the examinee towards the control questions, thus depriving the examinee the choice of self-directing his psychological set [13] towards the questions (control or relevant) that present the greatest threat to his well-being which is determined from the analysis of the physiological data collected from the examinee. The Backster ZCT rules mandate that once the test questions have been reviewed with the examinee, the collection of the data must not be interrupted with any language that would influence the examinee’s psychological set towards the control or relevant questions. The sole exception is when there is no response to either the relevant or the control questions. Then the control questions only are reviewed with the examinee in accordance with Backster’s Eight-Reaction Combination Guide (Backster 1963 & 1979 [4], 1969 [3]) or Matte’s 23 Reaction Combination Guide (Matte, 1981 [18], 1996 [14]). See also “Psychological Structure and Theoretical Concept of the Backster Zone Comparison Technique and the Quadri-Track Zone Comparison Technique. *Polygraph*, 2007 [15].

Horvath mentions the use of the MGQT (Modified General Question Technique) in his laboratory study which he states generally makes use of the non-exclusive control question. The exclusive as well as the non-exclusive control questions were tested using the MGQT format and found that the exclusive control question did not perform as well as the non-exclusive control question, which is of no surprise to this author (Matte) inasmuch as the format included five relevant questions and only two exclusive control questions. This failure to use the proper format for each type of control question was previously discussed on pages 116-117 of 1996 textbook [14] “Forensic Psychophysiology Using The Polygraph.”

The Utah Study (Raskin, Barland, Podlesny, 1978 [24]), evaluated the psychostructural validity of the Reid non-exclusive control question as used in the Reid Technique and format, versus the Backster exclusive control question as used in the Backster Technique and format. The rate of accuracy of decisions using Backster exclusive control questions was 94%, and 83% with the Reid non-exclusive control questions. In the comparison of Backster exclusive control questions and the Reid non-exclusive control questions, the tests using exclusive control questions which employed a time bar to exclude the period of the crime from the period encompassed by the control question, produced significant identification of innocent subjects (mean score = +13) and guilty subjects (mean score = -11.7), but the results with Reid non-exclusive control questions which included the period of the crime encompassed by the control question, were significant for innocent subjects (mean score = +14.2) but not guilty subjects (mean score = -6.3). A quantitative analysis of physiological responses also produced some

results which indicated a superiority for test utilizing exclusive control questions. Measures of skin conductance response recovery times and amplitude of negative skin potential responses showed strong reactions to relevant questions by guilty subjects and to control questions by innocent subjects only with exclusive control questions. The test which used non-exclusive control questions showed no discrimination for either of those measures. The study concluded that control questions which are separated from the relevant issue by age or time of occurrence have some advantages over control questions which do not have those exclusionary characteristics. Had the Horvath-Palmatier study used the psychostructural format for which the exclusive and non-exclusive control questions were designed to be used, the outcome of their study would most likely mirror that of the Raskin, et al 1978 study [24].

In addition it should be noted that in the Horvath-Palmatier laboratory study, a stimulation test was administered after the first relevant chart was collected, in violation of the Backster ZCT protocol. The accuracy of aforesaid MGQT was reported by D. Krapohl in *Polygraph*, 2006 [9], which listed two field studies and one laboratory study as the basis for his findings which are as follows:

MGQT accuracy for Deceptive cases: 97% correct, 7% inconclusives.

MGQT accuracy for Truthful cases: 25% correct, 35% inconclusives.

Overall accuracy, 61% correct without inconclusives, 21% inconclusives.

The dismal performance of the MGQT in aforesaid studies used non-exclusive control questions.

Horvath stated that of all the polygraph schools accredited by the American Polygraph Association, only one of them, the Backster School of Lie Detection focusses primarily on the approach described by this author (Matte), which is the Backster ZCT. However, Horvath failed to recognize that the Quadri-Track Zone Comparison Technique also uses non-current exclusive control questions and the “Either-Or” rule on a non-selective basis. Three field studies (Matte, Reuss, 1989 [20,21]; Mangan, Armitage, Adams, 2008 [10]; Shurany, Stein, Brant, 2009 [25]) published in peer-reviewed journals (*Polygraph*, *Physiology & Behavior*, *European Polygraph*) respectively, have validated the technique with an overall accuracy of 98.8% and a 2.4% Inconclusive rate.

Horvath attempts to justify the use of a laboratory study as being a viable alternative to a field study in spite of his comments in a previous laboratory study (Horvath, *Polygraph*, 1994 [7]) where he stated that laboratory studies “must be interpreted with some caution. These data were collected in a laboratory environment where motivational and other differences may make it unlikely that the results can be generalized to real-life testing situation. Of course, this caveat would apply to all laboratory studies and indeed there are some who maintain that results in this environment should not ever be extended to actual testing situations.”

A recently published paper by this author (Matte) entitled “Guiding Principles and Benchmarks for the Conduct of Validity Studies of Psychophysiological Veracity Examinations Using the Polygraph” in *European Polygraph*, 2010 [12], clearly and persuasively argues against the use of laboratory studies to validate control question techniques and their related

components. This thesis sets forth guidelines for acceptable scientific conduct of field validity studies of control question techniques.

A current research paper entitled “Psychological Aspects of the Quadri-Track Zone Comparison Technique and Attendant Benefits of its Inside Track” by Matte published in *European Polygraph*, 2011 [19], discusses at length each component of the Quadri-Track ZCT test structure with supporting research, and addresses challenges against the use of symptomatic questions, the sacrifice relevant question, exclusive control question and other issues relevant to the application of this technique and the Backster ZCT.

In summation, Horvath apparently failed to understand that the non-current exclusive control question was designed by Cleve Backster to enable the Backster Zone Comparison Techniques’s “Either-Or” rule, hence is not designed to be used in a MGQT or other control question technique format that does not use the “Either-Or” rule and related Backster technique protocol. The Horvath-Palmatier laboratory study’s failure to duplicate the psychostructural format and protocol in which the non-current exclusive control question is designed to be used resulted in an invalid assessment of the effectiveness of the non-current exclusive control question. The fact that the aforesaid study was conducted under laboratory conditions further precludes its findings from being applied to real-life testing situations.

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