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**Psychological Structure and Theoretical Concept
of the
Backster Zone Comparison Technique**

by

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During the course of three and a half decades of conducting polygraph examinations including numerous quality control reviews (QCR) of examinations administered by other polygraphists, it became quite apparent that the theoretical concept and psychological structure of the Backster Zone Comparison Technique were not fully understood by many polygraphists who administered the Backster ZCT or its derivatives (Federal ZCT, Quadri-Track ZCT, Integrated ZCT, Utah ZCT). This is evident by some of the modifications that were made to Backster's ZCT that failed to consider the consequences of those seemingly unimportant changes that redirected or fractured the flow of the examinee's psychological set thus adversely affecting the technique's accuracy. There appeared to be an equal lack of understanding and appreciation for the *theoretical concept* of the Backster ZCT which necessitates that a *structured pretest interview* that is designed to psychologically prepare the examinee for the administration of the test be administered in an unbiased manner that focuses on the relevant and comparison¹ questions, without inviting outside issues that can interfere with the examinee's psychological set.

However, the polygraph community's recent emphasis in combating the use of countermeasures, mental countermeasures in particular, has resulted in some additional modifications that appear on the surface to address the mental countermeasure problem. In fact these modifications create a significantly greater problem wherein the cure is worse than the disease.

Therefore, I believe that a presentation of the theoretical concept and psychological structure of the Backster Zone Comparison Technique, from which all of its derivative Zone Comparison Techniques originate, is most timely.

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¹ Comparison questions were formerly known as control questions;

Several polygraph techniques have emerged over the past half century which have proven themselves in the field with empirical data and studies that support their reliability, that do not fall within the family of zone comparison techniques, such as the Reid Technique and its derivative Arthur Technique. Heated debates have occurred regarding the efficacy of various components of those techniques versus the components of the zone comparison techniques, such as the use of non-exclusive versus exclusive comparison questions, done without realizing that each type of comparison question was designed specifically for the particular technique developed by its author. Hence the non-exclusive comparison question designed for use with the Reid and Arthur technique would not be appropriate for the Backster ZCT, which requires a distinct separation of relevant versus comparison question, whereas the exclusive comparison question would be too weak for use with the Reid and Arthur technique that has twice as many relevant versus comparison questions. Backster, Reid and Arthur were masters at their craft and spent many years in the development and refinement of their individual techniques which have all withstood the test of time, usage and study, hence command adherence to their individual theoretical concept and psychological structure without unnecessary modification. Therefore, this thesis's sole focus is on the theoretical concept and psychological structure of the Single-Issue Zone Comparison Technique originated by Cleve Backster, which in no way challenges the scientific merits of non-zone comparison techniques.

The Backster Zone Comparison You-Phase Technique is a true single-issue test that offers two threats to the examinee who must chose which of those two threats presents the greatest peril to his security and well-being. The first threat comprises the two relevant questions dealing with the same single issue. The second threat is in the form of comparison questions dealing with earlier-in-life activities that the examinee wishes to conceal from the polygraphist. In order for the examinee to be given a clear choice between those two threats, a time bar is used to clearly separate the time period covered by the comparison questions from the time period covered by the relevant test questions. The placement of the comparison questions in an earlier-in-life time frame also makes them structurally less intense than the relevant questions thus obviating an equal threat to the guilty examinee that would cause an inconclusive test result. Backster thus introduces us to his "Either-Or" rule, which dictates that the examinee ideally should respond to either the relevant questions which he labeled the "Red Zone" or the comparison questions which he labeled the "Green Zone" but not to both. In order to facilitate the focus of the examinee's psychological set on the Red Zone or the Green Zone, he restricted its scope to two relevant questions dealing with the same specific issue flanked by the comparison questions immediately preceding and following them without any other type of question in between them that would interfere with the flow of the examinee's psychological set. Hence, like a beam of light that becomes more intense as it narrows its scope, the guilty examinee's narrow focus is riveted onto the two relevant questions that present the greatest threat to his well-being which should dampen out his concern over the neighboring comparison questions that are structurally less intense, whereas the properly indoctrinated innocent examinee who is truthful to the relevant questions will find his psychological set focused onto the comparison questions that are deliberately designed to elicit mental effort and exercise known to produce an autonomic response. Hence, to the guilty, the relevant questions have greater signal value; to the innocent, the comparison questions have greater signal value. The reason for having two relevant questions regarding the same issue rather than one is to achieve internal reliability.

Although the comparison questions are structurally less intense than the relevant questions, they must be presented to the examinee in a manner that conveys *equal importance* to the results of

the examination. Therefore, special care must be taken during the review of the test questions with the examinee that the comparison questions be introduced with a preamble that convinces the examinee of their importance rather than a timid and subdued review that minimizes their significance. Furthermore, each relevant question is immediately preceded by a comparison question that offers the innocent examinee an opportunity to respond and dampen the potential response offered by the neighboring relevant question which could still offer the threat of error to the innocent examinee. (Matte & Reuss, 1989; Ekman, 1985; NRC 2003). It is therefore imperative that the examinee's psychological set be self-directed onto the Red or Green Zone questions without any influence from the polygraphist who must maintain total impartiality. It is also imperative that no accusatory or interrogative approach be used by the polygraphist during any portion of the pretest interview and the collection of the physiological data. Violation of this procedural requirement will invalidate the test data.

In order to prevent the introduction of other issues that would compete and interfere with the examinee's psychological set which should be focused on the Red Zone or Green Zone test questions, the polygraphist must use a standardized pretest interview² that is designed to prepare the examinee psychologically for the introduction of the Red and Green Zone questions without eliciting information from the examinee that would raise outside issues that would fracture or divert the examinee's psychological set from the programmed dual threat offered by the Red and Green Zone test questions. Therefore, Backster provided for two symptomatic questions designed to assure both the innocent and guilty examinee that no surprise or unreviewed questions will be asked during the test. Those two symptomatic questions are positioned in a manner that encases and frames the Red and Green Zone test 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 believe on the last test question having orienting value to relieve on the symptomatic question rather than the preceding red or green zone question. Furthermore, the first symptomatic question is used as a buffer between the first comparison question and the preceding Preparatory/Sacrifice Relevant question which is known to elicit an autonomic response from both the innocent and guilty examinee due to its being the first relevant threat on the test.³

The Sacrifice Relevant question has a dual function in that it also acts as a Preparatory question for the introduction of the two relevant test question. The two relevant questions, which are used for the determination of truth or deception to the target issue, must be short, succinct and thoroughly reviewed with the examinee so that they do not elicit any mental effort or exercise except in the deception syndrome. Published Research (C. D. Lee, 1953; Boiten, 1993; Bongard, et al., 1997; Fokkema, 1999; Ring, et al, 1999; and Winzer, et al, 1999) has shown that mental effort will cause an autonomic response undistinguishable from deception. By the same token, short relevant questions may be attacked as having insufficient identification of the offense or matter being tested, which can easily be rectified by using the Sacrifice Relevant question as a Preparatory question that fully identifies the issue. However, the excessive length of a relevant question is not the only factor that can elicit mental effort or exercise. The content of a relevant question that compels an examinee

² Standardized Pretest Interview is set forth in 2002 Supplement, Forensic Psychophysiology Using The Polygraph, by James Allan Matte.

³ Backster changed the position of Symptomatic Question #25 from position 3 to position 2 in 1983 to conform with the position of that Symptomatic Question in his exploratory tests. Nevertheless, he does permit repositioning of Symptomatic Question #25 to its original position #3.

to search his memory will also elicit mental effort, such as the veracity and accuracy of a lengthy written statement. Conversely, comparison questions which encompass a lengthily period of the examinee's earlier-in-life activities are intentionally designed to elicit mental effort and exercise that will cause an autonomic response from the innocent examinee.

An important feature of the technique's psychological procedure is the order as well as manner in which the test questions are reviewed with the examinee. The relevant questions, starting with the Preparatory/Sacrifice Relevant question, are reviewed first. Then a preamble explaining the importance⁴ of the comparison questions is followed by a review of those comparison questions. Acquiring feedback from the examinee as to their understanding and correct interpretation of those test questions will prevent erroneous results. A good example is the Fear of Error (comparison) question versus the Hope of Error (relevant) question used in the Quadri-Track ZCT⁵, a close derivative of the Backster ZCT. During the pretest interview, the examinee is primed to provide a negative answer to the Fear of Error comparison question and most examinees do indeed answer that question in the negative due to the manner in which the pretest is conducted. The two questions are listed below:

Comparison Q: Are you *afraid* an error will be made on this test regarding the target issue?

Relevant Q. Are you *hoping* an error will be made on this test regarding the target issue?

Most polygraphists would be elated at acquiring a negative answer to the comparison question and would not tempt fate by querying the examinee about the reason for his negative answer, wanting to immediately proceed to the relevant (Hope of Error) question. However that is precisely what the polygraphist must do; query the examinee about his reason for the negative answer in order to acquire feedback that will insure that he interpreted the question properly, otherwise that comparison question could be ineffective. This author has found a significant percentage of examinees who have provided a negative answer and upon inquiry, stated that they were not afraid that an error would be made on the test regarding the target issue because they were innocent and did not commit the crime. After pointing out that the mere fact that they may be innocent does not have any effect on the accuracy of the polygraph instrument nor the competency of the polygraphist, but had they provided a negative answer because they believed in the accuracy of the test, then their negative answer would be the correct one. With this explanation, many of them reconsidered their answer, leaning towards an affirmative one, which then required that the polygraphist reassure them of the accuracy of the test again, and request their reciprocal vote of confidence⁶ that has not failed this author in acquiring a negative answer in many years. This feedback insures the effectiveness of that comparison question which may truly identify an innocent examinee's fear of error that can avoid a false positive result. The Hope of Error relevant question is designed to elicit an autonomic response from the guilty examinee who will have no fear of error but

⁴ For a full discussion of the procedure used in the introduction/review of comparison and other test questions, please read Chapter 8, *Forensic Psychophysiology Using The Polygraph* (1996), and 2002 Supplement thereto.

⁵ Cleve Backster recognized the logic and diagnostic value of the Quadri-Track ZCT's Fear and Hope of Error questions, stating that these two questions did not deal with a different group of people nor did they require a different or additional zone designation, hence a change in the name from Quadri-Zone to Quadri-Track ZCT.

⁶ During the pretest interview, immediately after listening to the examinee's version of the incident, the examinee is assured by the polygraphist that he is assumed to be innocent of the offense for which he is being tested and that the polygraphist maintains this assumption of his innocence until all of the physiological data has been collected, analyzed and scored for definite results.

in fact will hope that an error will be made on the test regarding the target issue. Hence feedback is essential, otherwise a fearful innocent examinee who misinterprets the Fear of Error question will not be identified, and a guilty examinee will react due to his misunderstanding of the question.

Listed below is the order in which the test questions are reviewed, followed by the order in which they are asked on the test. The fact that some of the test questions elicit a negative answer while others elicit an affirmative answer and the examinee is not apprised of the order in which the test questions will be asked on the test, hampers attempts at disassociation.

| | <u>Backster ZCT</u> | <u>Quadri-Track ZCT</u> |
|------------------------------------|---|---|
| Order of Review: | 39. Preparatory/Sacrifice Relevant Question 33. Relevant Question 35. Relevant Question 46. Exclusive Comparison Question 47. Exclusive Comparison Question. 48. Exclusive Comparison Question 14J Neutral/Irrelevant Question 25. Symptomatic Question 26. Symptomatic Question. | 39. Prep/Sacrifice Relevant 33. Relevant Question 35. Relevant Question 46. Exclusive Comparison 47. Exclusive Comparison 23. Fear of Error Comparison 24. Hope of Error Relevant 14J Neutral, Irrelevant 25. Symptomatic Question 26. Symptomatic Question. |
| Order of Questions on Test: | Backster ZCT 14J Neutral, Irrelevant Question. 25. Symptomatic Question 39. Preparatory/Sacrifice Relevant 46. Exclusive Comparison Question. 33. Relevant Question. 47. Exclusive Comparison Question. 35. Relevant Question 48. Exclusive Comparison Question 26. Symptomatic Question. | Quadri-Track ZCT 14J Neutral, Irrelevant Question 39. Prep/Sacrifice Relevant 25. Symptomatic Question. 46. Exclusive Comparison 33. Relevant Question 47. Exclusive Comparison 35. Relevant Question. 23. Fear of Error Comparison 24. Hope of Error Relevant 26. Symptomatic Question. |

Note: The two relevant questions (33 & 35) are rotated in position after the first chart and subsequent charts thereafter in order for each relevant question to be compared with each comparison question.

Neither the comparison questions nor the relevant questions should start with the same wording. This avoids the possibility that the examinee will believe that the same test question is being repeated because something is wrong, which would increase his anxiety towards that question.

The name of any individual, especially a victim, mentioned in the test should be fully identified in the Preparatory/Sacrifice Relevant Question and at least in one of the two relevant

questions used for a determination of truth or deception, so as to avoid rationalization on the part of the examinee or psychological conflict with that of another victim unknown to the polygraphist.

When there are several target issues to be covered during a polygraph examination, the target containing the greatest score⁷ for Adequacy of Case Information, Target Intensity, and Distinctness of Issue is scheduled as Test A. The next target containing the second highest score is scheduled as Test B, and the third highest score is scheduled as Test C. Usually no more than three single-issue You-Phase Zone Comparison tests are scheduled in one session. However, it is most important that the examinee be apprised of each issue to be tested and that they will each be covered in separate tests. However, only the test questions for Test A are to be reviewed with the examinee who now knows that the other issues will be addressed in separate tests. Failure to advise an examinee of all issues that will be covered in the examination may cause the absorption of all issues by the examinee into Test A, thus confounding the examinee's psychological set, whereas prior notification of each test will allow the examinee's selective attention to be focused on the specific issue being tested, knowing that the other issues will be covered in separate tests.

There has recently been a surge of interest in the use of mental countermeasures and methods of countering them. One of those methods attempts to deter such usage by instructing the examinee to repeat the last word of each question followed by his one-word answer, which it is thought would defeat attempts at disassociation.

However, repetition of the last word of a question by the examinee plus the utterance of his answer indeed requires the examinee's attention and mental effort which can produce distortion in the breathing tracing and an autonomic response in all three tracings. Furthermore the utterance of some words from a test question, particularly in sex offenses, can also have an emotional impact that can produce an autonomic response. An example is relevant question: "In July 2001, did you force your penis inside Tracy Jones' vagina?" Answer: "Vagina, no."

Published research (Lee, 1953; Boiten, 1993; Bongard, et al, 1997; Fokkema, 1999; Ring, et al, 1999; and Winzer, et al, 1999) clearly indicates that mental effort or exercise can cause an autonomic response undistinguishable from the deception syndrome. Hence relevant questions must be short, succinct and thoroughly reviewed with the examinee so that the relevant questions will elicit no mental effort or exercise.

Historically, the repetition of the last word of each question has been occasionally used in the administration of Peak-of-Tension Tests such as the Guilty Knowledge Test or the Concealed Information Test, but these are not classified as 'Lie Tests' (Lykken, 1960, 1981). They are recognition tests to determine whether the examinee can identify the correct alternative to several equally plausible alternative answers to questions about the crime. The control question test such as the Zone Comparison Technique is in fact a *Lie Test* whose psychological theory and structure is quite different than the Peak-of-Tension Test. In the former, both the innocent and guilty examinee are very much aware of the nature and threat of the relevant test questions, whereas in the latter, only the guilty examinee is aware of the key (relevant) question. As explained earlier in this article, the comparison questions are designed to elicit mental effort and exercise whereas the relevant questions

⁷ The Examination Reliability Rating Table is depicted on Page 326, *Forensic Psychophysiology Using The Polygraph* (1996).

are formulated to be short, succinct and devoid of any mental effort except in the deception syndrome. This makes the zone comparison test far more complex in its psychological structure and administration and far more likely to produce false positive results when this protocol is violated.

This article is not intended as a lesson plan in the administration of the Backster Zone Comparison Technique or any of its derivate zone comparison techniques. However an understanding of the basic theory, principles and protocol related to the zone comparison technique should aid polygraphists in avoiding well-intentioned but misguided modifications to a well founded technique or procedures that violate its established protocol.

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