A Critical Analysis of Amsel's Comparative Study

of the

Exclusive v. Non-Exclusive Comparison Question

by

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In a field study of the relative effectiveness of exclusive and nonexclusive probable-lie comparison questions, wherein 87 confirmed real-life examinations used exclusive comparison questions and 143 confirmed real-life examinations used non-exclusive comparison questions, Tuvya T. Amsel reported that the non-exclusive comparison questions had significantly larger mean numerical scores than the exclusive comparison questions and the non-exclusive comparison questions had scores significantly more in the correct direction than those produced by exclusive comparison questions. Amsel used a variation of the Backster Zone Comparison Test format. Amsel cited two earlier laboratory studies (Horvath 1991 and Palmatier 1991) that supported his findings.

The Zone Comparison Technique developed by Cleve Backster has historically employed non-current exclusive control questions[1] that use a time bar that significantly separates the comparison question usually by several years from the period that the crime occurred. It has always been Backster's contention that non-exclusive comparison questions, with the ground-truth guilty subject, on many occasions allowed the comparison questions to act as weak relevant questions, thereby producing reactions competing with the stronger relevant question reactions. Furthermore, the Backster Zone Comparison Technique uses a 7-position scale to numerically score the physiological data, in order to provide degrees of response in each of the three parameters at a given spot location. The Sacrifice Relevant Question used in the Backster ZCT is confined to the precise identification of the specific issue covered by the single-issue relevant test questions, thus also serves as a Preparatory Relevant question. Finally, the Backster ZCT does not end its test sequence with either a comparison or relevant test question, in order to avoid possible end-of-question series relief on a test question that may be used for a spot analysis numerical evaluation.[2]

The field study conducted by Amsel employed current exclusive comparison questions that excluded only the specific instant crime but not other crimes committed

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[1] The definition of non-current exclusive control or comparison questions, current exclusive control question, and non-exclusive comparison questions can be found in Chapter 16, Forensic Psychophysiology Using The Polygraph (1996), J. A. Matte. J. A. M. Publications, Williamsville, New York.

[2] The Matte Quadri-Track Zone Comparison Technique also employs the 7-position scale, precise Sacrifice/Preparatory Relevant Question, and avoidance of possible end-of-series relief by using a symptomatic question at that question sequence location.

during that same period. Whereas the non-current exclusive control question as used in the Backster and Matte Zone Comparison Techniques exclude not only the specific instant crime but also other crimes possibly committed during the period preceding the instant offense by several years. Furthermore, different time bars covering different periods are used for each of the comparison questions in the Backster and Matte Zone Comparison Techniques to distinguish and differentiate each comparison question thus avoid/delay habituation.

Amsel's study employed a 3-position scale of numerical scoring which did not differentiate between a subtle reaction and a dramatic reaction, whereas in the Backster and Matte Zone Comparison Techniques,[3] a 7-position scale is employed which does differentiate between subtle and dramatic reactions by evaluating the degrees of response in each of the three parameters at each spot location. Blackwell's recent (1999) 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 examiners 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 ground-truth innocent examinations or the ground-truth guilty examinations." Krapohl (1998) found that the 3-position scale with a cutoff (threshold) of +/-4 was statistically equivalent to the widely accepted 7-position scale with the +/-6 cutoff score (threshold). However, Krapohl also found that "the highly experienced raters in this study rarely used the full range of available values in the 7-position scale, employing the narrower range of the 3-position scale for about 90% of the question comparisons." Capps & Ansley 1992a and Van Herk, 1991, like Krapohl , 1998, found that the accuracy of the 7-and 3-position scales depended on the threshold used. Both the Backster and Matte Zone Comparison Techniques use an increasing threshold, whereas other Zone Comparison Techniques (DoDPI, Utah) employ a fixed threshold.

Amsel's study employed a Sacrifice Relevant Question (SRQ) that violated the Backster concept and purpose of the SRQ in that it covered both the comparison and relevant test questions. The Backster SRQ 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 SRQ 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/her possible anxiety regarding the instant offense. Furthermore, the Backster SRQ also acts as a Preparatory question for the introduction of the relevant questions, thus focussing the guilty examinee's psychological set onto the relevant questions.

The test structure used by Amsel in his field study used a comparison question as the last question in its test sequence, whereas the Backster Zone Comparison Technique

[3] The Department of Defense Polygraph Institute (DoDPI) also uses the 7-position scale in the scoring of the physiological data collected from examinees in PV examinations.

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 significantly degrading the effectiveness of that comparison question.

Amsel employed a significantly greater number of non-exclusive comparison questions (62.2%) than current exclusive comparison questions (37.8%) yet makes a visual comparison (Figures 1 & 2) of the score ranges between the two types of comparison questions, albeit admitting that "it may be argued that this result is due to the larger number of examinations conducted using nonexclusive comparison questions."

Amsel criticized this author (Matte) for apparently failing "to adequately review the research literature addressing this issue before writing his text. In 1991 Palmatier reported his research findings after replicating Horvath's (1991) study." [4] However, Palmatier's laboratory study was an unpublished Master of Science degree thesis, not listed in any of the scientific literature.

The studies conducted by Horvath (1991) and Palmatier (1991) were both laboratory studies, which lack the *fear of detection* by the ground-truth guilty examinees, and the lack of the milder yet important fear relating to character aspects, on the part of the ground-truth innocent examinees. Also lacking was *the fear of error* by the innocent examinees, and the lack of *anger* which can also cause an autonomic response, all potentially present in field cases. In addition to the problems inherent in Horvath's laboratory study, some of which were identified in Amsel's study, Palmatier made several significant procedural errors in his laboratory study. Palmatier dropped the last two relevant questions used with the Mixed General Question Test (MGQT) thus attempting to convert an already administered MGQT examination to a Zone Comparison Test by evaluating only the first three relevant questions on that test.
Hence, we are to believe that the dropped relevant questions had no effect on the first three relevant questions nor their neighboring comparison question nor the overall examination. Palmatier used the same age category for all exclusive comparison questions, contrary to the Backster Zone Comparison Technique. Palmatier also used a relevant question as the last test question, thus committing the same error as Amsel in his test structure. Palmatier also used a Stimulation Test as the second test, a departure from both the Backster and Matte Zone Comparison Technique methodologies. The cuff pressure used in Palmatier's laboratory study was between 40 and 55 mm/hg which is considered inadequate, technique wise, for cardiograph recording and counterproductive for the pneumograph recording. Barland (1984) reported that a cuff pressure at 90 mm/hg with a mean arterial blood pressure (MABP) of 100 mm/hg before reaction which increases to 120 mm/hg during reaction will show a difference in reaction amplitude of 200%, whereas a cuff pressure at 60 mm/hg with a mean arterial blood pressure (MABP) of 100 mm/hg before reaction which increases to 120 mm/hg during reaction will show a difference in reaction amplitude of only 50%. Furthermore, cuff pressure of 75 mm/hg or more diverts the examinee's attention from his/her breathing to the cuff pressure, thus

[4] Amsel listed this author's (Matte) text as having been published in 1997, when in fact it was published in 1996.

producing potentially truer, uncontrolled respiratory patterns. In the final analysis, both laboratory studies by Horvath and Palmatier failed to replicate the emotional and psychological elements found in examinees suspected of real-life crimes, and further failed to replicate the test structure of the Zone Comparison Technique as developed and used by its originator Cleve Backster.

In view of the above analysis, it can be stated that the results of Amsel's study can only be applied to the test structure used in his study. The non-current exclusive control question is designed to be used within the test structure as found in the Backster and Matte Zone Comparison Techniques. To imply that the *non-exclusive* comparison question is superior in effectiveness to the non-current *exclusive* control question in all test structures is misleading, inaccurate and not supported by any field studies.

REREFENCES:

Amsel, T. T. (1999). Exclusive or nonexclusive comparison questions: A comparative field study. *Polygraph*, 28(4): 273-283.

Backster, C. (1969). *Standardized polygraph notepack and technique guide*. New York: Backster Research Foundation.

Backster, C. (1990). *Backster zone comparison technique chart analysis rules*. Handout at lecture of the 25th annual seminar/workshop of the American Polygraph Association, 14 August 1990, Louisville, Kentucky.

Barland, G. H. (1984, June 1-2). The Cardio Channel: A Primer: Paper presented at the Florida Polygraph Association Seminar. 15 pages.

Blackwell, N. J. (1999). PolyScore 3.3 and psychophysiological detection of deception examiner rates of accuracy when scoring examinations from actual criminal investigations. *Polygraph*, 28(2): 149-175.

Capps, M. H., Ansley, N. (1992a). Comparison of two scoring scales. *Polygraph*, 21(1): 39-43.

Capps, M. H., Ansley, N. (1992b). Analysis of federal polygraph charts by spot and chart total. *Polygraph*, 21(2): 110-131.

Horvath, F. (1991). The utility of control questions and the effects of two control question types in field polygraph techniques. *Polygraph*, 20(1): 8-25.

Krapohl, D. J. (1998). A comparison of 3- and 7-position scoring scales with laboratory data. *Polygraph*, 27(3): 210-218.

Matte, J. A. (1996). *Forensic Psychophysiology Using The Polygraph: Scientific Truth Verification – Lie Detection*. Williamsville, New York: J. A. M. Publications.

Matte, J. A. (1999). Numerical scoring systems in the triad of Matte polygraph techniques. *Polygraph*, 28(1): 46-55.

Palmatier, J. J. (1991). Analysis of two variations of control question polygraph testing utilizing exclusive and nonexclusive controls. Unpublished Master of Science Thesis, Michigan State University, East Lansing, Michigan.

Swinford, J. (1999). Manually scoring polygraph charts utilizing the seven-position numerical analysis scale at the Department of Defense Polygraph Institute. *Polygraph*, 28(1): 10-27.

Van Herk, M. (1991). Numerical evaluations: Seven point scale +/-6 and possible alternatives; A discussion. *Polygraph*, 20(2): 70-79.