Polygraph

VOLUME 22 1993 NUMBER 4

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PUBLISHED QUARTERLY

P.O. Box 1061, Severna Park, Maryland 21146

EFFECTIVENESS OF THE SYMPTOMATIC QUESTIONS

By

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Introduction

Overview

Questioning with the aid of a polygraph evolved into a highly structured process even in its developmental days. Early questioning procedures involved the asking of irrelevant questions interspersed with relevant questions pertaining to the issue under investigation. In the 1930's "emotional standards" later referred to as "controls" were considered a highly effective addition to the technique. In 1960, with the introduction of the zone comparison test by Backster, a new type of question emerged known as the symptomatic (Ansley, 1990). Backster hypothesized that the high number of inconclusive diagnosis of polygraph results by examiners had to do with a bothersome outside issue on the part of the subject taking the examination. Plainly stated, his theory was that when the guilty did not physiologically react to the relevant questions nor the innocent to the control questions, there must be anticipation of some question about an outside issue that dampened out the response capability of the individual to the question types that would ordinarily serve as a stimulus. By the inclusion of questions into the technique at specified points the examiner would be able to identify the presence of this outside issue so that it could be addressed and resolved. According to Backster, this practice could reduce inconclusive diagnosis in control question tests by as much as two-thirds (Backster, 1961).

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The APA appreciates the assistance of the three forensic psychophysiologists who conducted the psychophysiological detection of deception tests of criminal suspects for this research. They were Matthew J. Bellmay of the Vermont State Police, Bobby N. Breed of the Birmingham Police Department, Birmingham, Alabama, and Ronnie K. Evans of the Clayton County Sheriff's Office. All are members of the APA Research Committee.

Since the introduction of this technique in 1960, it is the most widely taught (Weaver, 1992) and perhaps most widely used polygraph technique for single issue examinations (Kircher & Raskin, 1988).

In recent years, there has been immense skepticism on the part of numerous examiners about the necessity of the symptomatic question. This has resulted in a great many examiners modifying the techniques to delete symptomatics and replace them with irrelevants. One of the primary arguments has been that the overwhelming outside issue that was thought to necessitate the use of the symptomatic did not become an issue until it was brought up by the examiner, that is, the subject was not more concerned about another issue being addressed during the examination until the examiner asked him whether or not he was concerned. Perhaps examiners do not understand the purpose of the question, maybe the outside issue is not a factor or Backster just could be right.

This study, based on these differing points of view, will investigate the hypothesis that control question polygraph examinations containing symptomatic questions will have no difference in the number of inconclusive diagnoses by the original examiner than like tests containing no symptomatic questions.

History

Long before the end of the nineteenth century, men were seeking methods for identifying deception through the use of scientific instrumentation. Little is known about the questioning methods used in these procedures until the 1920's (Keeler, 1930). The manner of questioning employed by early examiners involved the use of a relevant/irrelevant (RI) technique, a peak of tension test, or a combination of the two.

The relevant/irrelevant system involved the asking of innocuous questions with no relevance to the issue under investigation, interspersed with relevant questions pertaining directly to the matter of concern. Examiners applied a global analysis in an effort to evaluate the results. This analysis involved the inspection of all physiological reactions to stimuli on all charts in an attempt to identify the greatest degree of change in the consistency of the physiological pattern. Additionally, diminution of response was viewed as an important factor in the overall analysis.

In a searching peak of tension test the examination began with the asking of a preparatory phrase such as, "If you were involved in shooting John Doe," followed by a question prefix for each question, such as, "Was the gun that was used a," then the question continued: a) ".22 caliber?" b) ".32 caliber?" c) ".357 caliber?" d) ".38 caliber?" e) ".44 caliber?" or f) ".45 caliber?" The preparatory question is an explanatory question or instructional phrase that informs or reminds the subject of the area embraced by the series that follows. The question prefix is a reminder accompanying each "choice" in the test series. The peak of tension test choices begin with questions being posed that are the least probable choices followed by the most probable

choices, then back to least probable choices. Often this test is concluded with an all-inclusive choice. Again, the examiner is seeking to find the greatest consistent change in physiological activity to a question. Although both of these techniques continued to the present there is no evidence that they continued in a combined form as was used in the 1920's.

In the 1930's, in an attempt to create a procedure which would yield more accurate results (Summers, 1936), Father Walter G. Summers of Fordham University introduced the "emotional standard," a form of control question, into the technique. These questions were selected after a careful analysis of the life history of the suspect and further after an examination of the electrodermal patterns of the suspect to a preliminary series of the emotion evoking questions. Summers stated:

> When chosen properly, the emotional standards tend to evoke within the individual rather intense psychogalvanic reactions to surprise, anger, shame or anxiety over situations he would ordinarily prefer to conceal. In the examination of suspects an emotional standard precedes each significant question." (Summers, 1939)

In the 1940's John Reid redefined the control question as a probable lie (Reid, 1966). Reid developed a question concerning an act of wrongdoing that had the same general characteristics as the occurrence being investigated. An important component to this question was that in all probability the answer given to the polygraph examiner by the suspect would be a lie or at least contain some degree of uncertainty. The physiological patterns provided by the suspect during the asking of the control questions were compared to those patterns produced during the asking of the relevant questions to see which of the two generated the greatest pattern change. It was theorized that the question type that precipitated the greatest reaction would lead the examiner to a diagnosis of truth or deception. There are some pitfalls to this theory, in that people differ in their emotional perspective toward the same circumstances, conditions or predicament and certainly in their concern toward the result, should they be found guilty of some misdeed (Lykken, 1974). Nonetheless, this procedure is based on the underlying assumption that the guilty are more aroused by the relevant question than the control question and for the innocent arousal is greater to the control than to the relevant (Foreman & McCauley, 1991). The essence of this concept involves the relationship between arousal and "threat value" (Gellatly & Meyer, 1992). If an individual, when presented with a demand, channels his fears and anxieties to that demand which is the greatest threat to his sense of well-being, then the concept upon which detection of deception is based appears to be sound. The "psychological set" or the focus of the examination for the deceptive subject is on the relevant question since that produces the greatest threat. The control question is presented in such a way as to heighten the emotionality connected with that question for the innocent subject. The intent is to guide the innocent into feeling more threatened by the nature of the control questions than the relevants. If the belief system can be sufficiently influenced the emotions can be as well (Benesh & Weiner, 1982). If the control questions are properly formulated, one could expostulate the significance of the

control for the innocent examinee is greater than that of the relevant (Furedy, Davis & Gurevich, 1988).

The control question technique appeared to demonstrate more promise than previous techniques not only because of the dichotomous evaluation process as opposed to global analysis but also because the procedure readily lent itself to a numerical analysis system of evaluation. This method of evaluation involves the assignment of numerical values based on the degree and duration of changes in the physiological patterns.

Symptomatic Questions

In 1960 Backster proposed an innovative questioning procedure to the polygraph field called the zone comparison technique. This technique demonstrated similarities of other control question tests but introduced two new question types, the sacrifice relevant and the symptomatic. Backster, like many others, had discovered when truthful individuals were subjected to a polygraph test there was still extensive emotionality exhibited during the examination to the relevant question. Much of this problem was thought to have been resolved by the implementation of the control question.

The objective of the sacrifice relevant was to "break the ice" concerning the relevant issue being explored. Backster experimented with the use of two intent questions, asked one after the other at the beginning of the test. An intent question, referred to by some as a semi-crucial question, had made its way into use in the relevant/irrelevant (RI) technique, designed to be non-stimulating to the innocent but stimulating to the guilty (Lee & sons, 1943). Backster stripped the pair of intent questions from RI techniques, then tested them to pick that question with the most stigmatic wording in an effort to "take the false edge off, to get rid of false positives" (Capps, 1991). The sacrifice relevant was conceived to act as a buffer and to habituate the physiological responses that normally occur to the first presentation of a question that identifies the matter of concern (Raskin, 1989). This question was not designed to be involved in the scoring process, however, evidence exists that the presence of reaction or lack of reaction to this question are very good indicators of performance on the overall examination (Capps, 1991).

The symptomatic question was introduced for an entirely different reason than that of any of the other test questions. Backster had noticed that a significant number of truthful persons exhibited no physiological responses to the control questions even though properly explained and formulated. Conversely, he found that a significant number of deceptive individuals demonstrated no physiological response to properly formulated relevant questions during the examination. When this type situation occurred examiners were compelled to make an inconclusive diagnosis. This simply meant that the examiner could not make a determination as to whether truth or deception was indicated. Backster estimated that diagnoses of this nature were manifested in approximately 25% of those examinations conducted with the relevant/irrelevant technique and 10% to 15% of those examinations conducted with a control question technique (Backster, 1975).

Backster's personal research led him to believe that the inconclusive rate could be reduced dramatically by the introduction of symptomatic questions into the technique.

During this time many examiners believed there were "guilt complex reactors" that reacted to every stimulus during the test and "non-reactors" who did not react to any of the questions posed during the test. Backster believed that the "non-reactor" condition was not caused because a person did not possess a basic response capability but was a result of "sensory perception," a person being attuned to some other threat besides that presented during the test. He theorized that the person who is deceptive to the issue under investigation may have been involved in some other misdeed that is so consequential to him that there is no meaningful threat posed by the questions embodying the relevant issue. Correspondingly, the truthful person may be apprehensive about some sensitive issue in their life that they do not want anyone to know about no matter how minor it might be. The emotionality that is associated with these feelings may suppress any physiological responses to less emotion provoking stimuli regardless of whether or not the individual is attempting deception to that issue. The bothersome outside issue that causes these problems for the polygraph examiner need not be a major event, but simply be perceived by the examinee as having more "threat value" to the examinee at the time the examination is conducted than any other stimulus presented.

The examiner was responsible during the interview conducted before the test to review all questions with the examinee that would be asked during the actual examination. He then had the task of satisfying the person that nothing else would be covered during the examination. Backster postulated that the best way to determine whether or not this process worded was to ask questions at specified points during the examination which would indicate whether or not there was any degree of emotionality associated with these concerns.

Whereas only one sacrifice relevant question was inserted into this new technique, two symptomatic questions were to be asked. Initially these questions were placed in the third and eighth question positions; later realigned to the second and eighth positions (Backster, 1979). Backster's purpose for two symptomatic questions may have simple been for symmetry as the technique contained two relevant questions and two control questions. The first symptomatic was phrased, "Are you completely convinced that I will not ask you a question during this chart that has not already been reviewed?" and the second symptomatic followed, "Is there something else you are afraid I will ask you a question about even though I told you I would not?" The questions were awkward and cumbersome to many and probably have been rephrased more times than not.

The questions were based on an issue of trust between the examiner and the examinee rather than on the concept of the bothersome outside issue they were to identify. Backster chose an indirect approach to the outside issue in lieu of the more direct method of simply asking, "Is there anything bothering you that is more important than the issues in this test?" The latter may

have given a better indication of an overwhelming fear regarding some other issue, however, it would not have identified concerns based on apprehension of the unknown.

The symptomatic, like the sacrifice relevant, was not to be used in the scoring process; however, certain U.S. Government agencies had other plans. The Army Criminal Investigations Division adopted a scoring process that involved the symptomatic question in position number eight in its system of evaluation. Control question number six was compared with relevant question number seven to see which had the greatest response. If the response at symptomatic number eight was greater than both six and seven regardless of any difference in their arousal levels no numerical score was given at that spot. The Naval Investigative Service went so far as to view the symptomatic in position eight as another control question. Relevant question seven was compared against the greater arousal of control six or symptomatic eight in each physiological parameter for assignment of a numerical score at that position (Koll, 1979).

It is clear that the introduction of the zone comparison technique and hence the symptomatic question had a major impact on the polygraph field. This influenced chart analysis, scoring techniques, and overall diagnosis of results. What is not clear is whether the insertion of the symptomatic question into the technique was truly beneficial in eliminating many of the inconclusive diagnoses as the developer of the procedure claimed was its ultimate purpose.

Method

Three experienced examiners who regularly conduct zone comparison type polygraph examinations were contacted. Each of the examiners is licensed by a state licensing board and each is a member of the American Polygraph Association. All of the examiners had previously participated in studies with the researcher wherein he had the opportunity to examine and evaluate their work. The examiners averaged five years and seven months in experience. They had each conducted about 600 zone comparison examinations. Beginning on a given date, the examiners were requested to conduct every other examination without the symptomatic questions normally contained in the zone comparison format. In the place of symptomatic questions, irrelevant questions were to be inserted. There was no other change to the format. The examiners were further instructed to evaluate the tests in the same manner they would have used had symptomatics been present. The evaluation process involved numerical scoring in every case although three-position and seven-position scales were both used. The determination of 'no deception indicated,' 'deception indicated,' or 'inconclusive' diagnosis was based solely on the designation made by the score. This method seemed to provide more uniformity in that different cutoff scores may be used with different scales as well as the fact that some examiners employ a "minus three spot rule" that ignores cumulative scoring whereas other examiners do not use that rule (Capps & Ansley, 1991). After the completion of each test, examiners were to send the researcher copies of data forms containing demographic information (Appendix A) and the scoring process (Appendix B). As all cases were conducted with Axciton polycomputers, all disks containing the physiological recordings were also provided to the researcher. The

researcher employed Version 2.1 of the analytic algorithm developed by the Applied Physics Laboratory at Johns Hopkins University to perform a computer analysis of this data. The program is referred to as POLYSCORE. Cutoff probability scores of $\geq .90$ were used to indicate deception, $\leq .10$ for no deception, and a range of .89 to .11 for inconclusive. One hundred and fifty zone comparison polygraph examinations were conducted by the examiners. One half of the examinations contained symptomatic questions, the other half did not. These were real criminal cases performed as part of an investigation of a law enforcement agency. In each case the examiner made a diagnosis of 'deception indicated,' 'no deception indicated,' or 'inconclusive.' Data was analyzed to determine the number of each of the three types of diagnoses by category: 1) those with symptomatic questions, and 2) those without. This was accomplished for those diagnoses by the examiner and by the computer algorithm. The inconclusive rate for each category was determined. The number of cases where ground truth was confirmed was also recorded. Ground truth was established by the confession or guilty plea of a deceptive person. In the case of the truthful individual, ground truth was established by the confession or guilty plea by another, exonerating the truthful individual.

Results

Of the 75 zone comparison polygraph examinations containing symptomatic questions, examiners made a diagnosis of 'deception indicated' in 41 cases (55%), 'no deception indicated' in 30 cases (40%), and 'inconclusive' in 4 cases (5%). When the POLYSCORE algorithm was applied to those same cases, a diagnosis of 'deception indicated' was made in 45 cases (60%), 'no deception indicated' in 25 cases (33%), and there were 5 'inconclusives' (6%). Three of the POLYSCORE 'inconclusive' decisions were called 'no deception indicated' by the original examiner; two were called 'deception indicated' by the original examiner. (See Table 1). Of the 71 cases where the original examiner made a conclusive diagnosis of truth or deception the POLYSCORE program was in agreement on 58 cases (83%). There were 13 cases where POLYSCORE diagnosis and that of the original examiner differed. Of these, the original examiner made a diagnosis of 'no deception indicated' on nine cases and 'deception indicated' on four. POLYSCORE reported six of these nondeceptive opinions as 'deception indicated' and three as 'inconclusive.' POLYSCORE reported two of these deceptive calls as 'no deception indicated' and two as 'inconclusive.' On the four cases called 'inconclusive' by the original examiner two were diagnosed as 'deception indicated' by POLYSCORE and two were diagnosed as 'no deception indicated.' Seventeen of the 75 cases were confirmed; 16 deceptive and one truthful. Of the confirmed cases the original examiner correctly diagnosed all 17 (100%). The POLYSCORE program also correctly diagnosed all 17 cases.

For the 75 zone comparison polygraph examinations containing no symptomatic questions, examiners made a diagnosis of 'deception indicated' on 37 cases (49%), 'no deception indicated' on 26 cases (35%), and 'inconclusive' in 12 cases (16%). When the POLYSCORE program was applied to analyze those same physiological recordings, a diagnosis of 'deception indicated' was made in 47 cases (62.6%), 'no deception indicated' in 20 cases (26.6%), and 'inconclusive' in

eight (10.6%) of the cases (see Table 2). The original examiner called four of the 'inconclusive' diagnoses by POLYSCORE 'no deception indicated,' three 'deception indicated,' and one 'inconclusive.' Of the 63 cases where the original examiner made a conclusive diagnosis of truth or deception, the POLYSCORE program was in agreement on 50 cases (79%). There were 13 cases where the POLYSCORE diagnosis differed with that of the original examiner. Of these, the original examiner made a diagnosis of 'no deception indicated' on 9 cases and 'deception indicated' on 4 cases. POLYSCORE reported five of the deceptive opinions as 'deception indicated' and four as 'inconclusive." Of the 12 cases that the original examiner diagnosed as inconclusive, POLYSCORE called nine 'deception indicated,' two 'no deception indicated,' and one 'inconclusive.' Twenty-four of the 74 cases were confirmed; 22 deceptive and 2 truthful. Of the confirmed cases, the original examiner diagnosed 20 correctly as deceptive, one correctly as truthful, and three as 'inconclusive.' The POLYSCORE program diagnosed 20 correctly as deceptive, 2 correctly as truthful, 2 as 'inconclusive.'

Overall there were 79 deceptive decisions, 56 nondeceptive decisions, and 15 inconclusive decisions by examiners in the 150 cases. The POLYSCORE program produced 72 deceptive diagnoses, 45 nondeceptive diagnoses, and 13 inconclusives. Of the 41 confirmed cases the original examiner was correct on 38 of 38 calls with three inconclusives; the POLYSCORE was correct on 39 of 39 calls with two inconclusives.

Table 1

Cases with Symptomatic Questions (n. 75)

	Deception Indicated	No Deception Indicated	Inconclusive
Examiner	41	30	4
POLYSCORE	45	25	5

Table 2

Cases without Symptomatic Questions (n. 75)

	Deception Indicated	No Deception Indicated	Inconclusive
Examiner	37	26	12
POLYSCORE	47	20	8

Table 3

Examiner Diagnosis for All Tests

	Tests with Symptomatics	Tests without Symptomatics	Totals
Conclusive Decisions	71	63	134
Inconclusive Decisions	4	12	16
Totals	75	75	150

Chi-square (df = 1)

$[x^2 \ (1) = 4.48, p = .034]$

Of the 75 zone comparison tests that used symptomatic questions, there were four inconclusive decisions made by the examiners, and five by POLYSCORE, the analytic algorithm. Of the 75 zone comparison tests that substituted irrelevant questions for symptomatic questions, there were twelve inconclusive decisions made by the examiners, and eight by the algorithm. Of sixteen inconclusive decisions by examiners, four occurred with zone tests with symptomatic questions, eight occurred with zone tests without symptomatic questions.

A goodness of fit chi square (x^2) test was employed to analyze the inconclusive diagnosis data. A two by two contingency table (see Table 3) demonstrated [x^2 (1) = 4.81, p = .0343].

These data provide sufficient evidence to reject the hypothesis that there is no difference in the number of inconclusive diagnoses in those zone comparison examinations containing symptomatic questions and those that do not.

Discussion

This research provides evidence to substantiate Backster's claim that the inclusion of symptomatic questions in the control question polygraph examination significantly reduces the inconclusive calls made by the examiner. The number of inconclusive calls were reduced by two-thirds, exactly as Backster predicted. This study found, as Backster did, that the symptomatics do make a significant difference in terms of alleviating inconclusive results. This research does not tell us why that may be the case. We can only speculate as Backster did that if the person is concerned about some issue, minor or major, that they do not want known then the arousal to other stimulus is somehow different than it would be if this bothersome issue were addressed. We do not know from this research whether one or two symptomatics would be needed for the desired effect to take place. We do not know whether the symptomatics should be involved in the scoring process. What we do know is that when included in the question format there is a significant effect toward fewer inconclusive diagnoses occurring in evaluations made by the examiner. However, the difference in inconclusive diagnoses for the POLYSCORE results did not reach statistical significance.

Only the zone comparison technique employs the use of symptomatics in its format but many thousands of polygraph examinations are conducted each year with other techniques. It would seem that if the theory of psychological set, "threat value," is applicable in all techniques then the use of symptomatic question(s) in those techniques might reduce the inconclusive rate as well. This may be especially true in the applicant screening domain, where the job applicant has many preconceived ideas regarding questions about which he is concerned but will never be asked during a polygraph examination. Insertion of one or more symptomatic questions into the preemployment polygraph test, generally the relevant/irrelevant format, may allow the subject to be more focused in terms of arousal.

This research suggests that additional studies need to be conducted not only with zone comparison techniques but with the inclusion of symptomatic questions into other techniques to determine their impact on inclusive diagnosis and overall resolution of results. Realizing that inconclusive rates may be low these studies need to be of sufficient sample size to adequately assess the significance of the data.

Even if symptomatics are found to be of no value in reducing inconclusives in other techniques, there is no evidence that having them in the technique interferes with the overall

outcome of the test. Therefore research involving insertion of this question type into the test has no scientific basis for objection. The fact that they are not an obstacle to obtaining correct results may not justify keeping them in the format. If an individual habituates to the test based on the number of questions in the test or the length of time he is actually tested it may be beneficial to take out any questions that have no utility. If the symptomatics are useful they should be employed with other techniques as well, some of which may have higher inconclusive rates than the zone comparison. This study did not answer that question.

It is noteworthy that the POLYSCORE program tended to make more deceptive calls than the original examiner on this data. We only have ground truth on 41 cases, 39 of which were correctly diagnosed by POLYSCORE with two inconclusives and no errors. Thirty-eight were correctly diagnosed by the original examiner with three inconclusives and no errors. We do not know whether POLYSCORE or the original examiner was incorrect in those unconfirmed case calls on which they disagreed.

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APPENDIX A

AXCITON POLYGRAPH PROJECT DATA SHEET

1. Examiner: _____

2. Department/Agency: _____

3. Exam Log #: _____

4. Axciton File #: _____

5. Exam Date: _____

6. Examinee Data:

   a. Sex: Male _____ Female _____
   b. Age: _____
   c. Race: White _____ Black _____ Hispanic _____
      Oriental _____ Other _____
   d. Education: < HS _____ HS Grad/GED _____ Some College _____
      College Grad _____ Masters _____ Ph.D. _____
   e. Primary Language: English _____ Other _____
   f. Occupation: _____
   g. # Hours Sleep: _____

7. Exam Data:

   a. Offense: _____

   b. Exam Technique: ZCT _____ MGQT _____ RI _____

      POT _____ Other _____

   c. Opinion: DI _____ NDI _____ INC _____

   d. Verified: No _____ Yes _____ How? _____

   e. Score Sheet Attached? Yes _____ No _____

8. Remarks:

_____
_____
_____

APPENDIX B

ZONE COMPARISON
NUMERICAL ANALYSIS DATA SHEET

CHART I	I	II	III	Component Total	
PNEUMO					
GALVO					
CARDIO					TOTAL
SUB-TOTAL					

CHART II	I	II	III	Component Total	
PNEUMO					
GALVO					
CARDIO					TOTAL
SUB-TOTAL					

CHART III	I	II	III		Component Total
PNEUMO					
GALVO					
CARDIO					
SUB-TOTAL					

SPOT TOTALS				

SUBJECT _____ GRAND TOTAL _____
ROOM _____
EXAMINER _____ DATE _____

Polygraph 1993, 22(4)

THE REVIEW, PRESENTATION AND ASSURANCE OF INTENDED INTERPRETATION OF TEST QUESTIONS IS CRITICAL TO THE OUTCOME OF POLYGRAPH TESTS

By

James Allan Matte

Background

The formulation of test questions is of such importance that most polygraph schools devote a distinct block of study and training designed to enable the student polygraphist to formulate test questions that are clearly understood by the examinee, identify the issue succinctly, meet the requirements imposed by the technique used, and conform to the legal or investigative objectives necessitating the test. But the manner in which these test questions are reviewed and presented to the examine are of equal importance to their formulation; and the intended objective interpretation must be assured to obtain consistent, accurate results.

The polygraphist must deal with examinees of various ages, cultural and educational background. While it is true that the age of computerization has entered the realm of polygraph chart interpretation and quantification, the methodology required to acquire those charts from the examinee will always require the expertise of a polygraphist whose role has become more complex as we examine the psychological factors that make up the test.

Clarence D. Lee, Captain of Detectives at the Berkeley Police Department in his book *The Instrumental Detection of Deception* published in 1953 stated in regard to the formulation of relevant questions,

> On the mental side all effort must be avoided except that involved in the deception syndrome. In a number of experiments with students, it was found that even doing very simple mental problems in arithmetic caused a rise in blood pressure, the magnitude of which rise was probably proportional to the effort, indicating that those skilled in mathematics would react less than those unskilled. Also in an actual case when the suspect was asked if he was at a certain place at a date long past, his effort to remember the date resulted in increased blood pressure despite the fact that he answered truthfully.

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The message here is that relevant test questions must be succinct, as short as possible, void of rationalization potential, and thoroughly reviewed with the examine' and thus not elicit any mental exercise from the examine. "All effort must be avoided except that involved in the deception syndrome."

By the same token, earlier-in-life control questions are designed to elicit mental exercise which may account for physiological responses to control questions by innocent examinees whose truthful responses were to the best of their memory with remained in a search mode during the test.

We can look upon the polygraph examination as a complex system encompassing the entire examination which includes all parts of the pre-test interview to include test question formulation, their review and presentation and assurance of intended interpretation, to the conduct of the polygraph test resulting in polygraph charts which are quantified for a determination. Therefore, the system includes all of the aforementioned interacting parts, anyone of which if omitted or altered effects the psychophysiological results of the polygraph test. The whole is the sum of its parts and the interactions of its parts.

The Pre-Test Interview

The failure of many polygraphists to recognize the inherent relationship between question formulation and assurance of intended interpretation through proper review, presentation, and feedback is also shared by some researchers whose studies attempted to verify the effectiveness of some of the psychological components of the polygraph test directly affected by this relationship.

In my twenty-one years as a practicing polygraphist I have had occasion to observe polygraphists trained at various polygraph schools in the conduct of polygraph examinations through closed-circuit television. During the pre-EPPA (Employee Polygraph Protection Act) era it was not unusual to have several polygraphists working on the same case involving several subjects in a search to identify a single perpetrator. These cases gave me opportunities to monitor and review the work of other polygraphists, which revealed significant dissimilarities in the methodology of their pre-test interview, although all were testing subjects on the same case, using the same test questions. It became apparent that those examiners who had developed a standardized method of test question review and presentation which informed and elicited information from the examine that assured the polygraphist of its intended interpretation and the examinee of the objectivity and the accuracy of the test, produced consistently better charts and more accurate results than those polygraphists who treated the examinees as inanimate objects.

A disquieting number of polygraphists merely reviewed the control questions with the examinee without any preamble, and with the assumption that all test questions were understood by the examinee in the manner intended. In fact, some polygraphists played down the importance

of the control questions by skimming through them quickly and lightly, giving the impression that they feared the examinee might otherwise bare his soul. An equally grave error was to assume that the examine understood and interpreted the test questions as intended on the sole basis of a correct answer without feedback verification. In some instances, little or no importance was given to the manner of delivery of the test questions during the actual examination, which included variations within the test from monotone statement-like questions to animated inquisitorial questions, which in my view, could seriously affect the psychological set of the examinee.

The effectiveness of each psychological component of the polygraph examination in the form of test questions is therefore dependent upon the proper delivery of test questions, clearly understood, and interpreted by the examinee as designed and formulated.

Before we examine the aforementioned factors by implementing a mock review/presentation of test questions in a control question format, i.e., the Quadri-Zone Comparison Technique, I would like to briefly discuss certain aspects of the pre-test interview which affect the review and presentation of the test questions.

The pre-test interview in the Quadri-Zone Comparison Technique as in other control question techniques is non-accusatory in nature. No accusatory or interrogative approach by the polygraphist is used during any portion of the pre-test interview of the polygraph examination or between administration of the polygraph charts. No accusatory or interrogative approach is used until all polygraph charts have been conducted and a determination of deception has been concluded from the final tally of the chart shores. In the final analysis, truth or deception is determined by the examinee's consistent physiological responses on the polygraph charts either to the control questions if truthful or to the relevant (crime) questions if deceptive. The examinee's psychological set is self-directed to those test questions that he or she find most threatening, either the control questions or the relevant questions. The polygraphist must not introduce any factors that will increase the threat of the relevant questions or the truthful examinee's fear of them. This is especially important because the earlier-in-life control questions are structurally less intense than the relevant questions. The pre-test interview is used to gather background data and the examinee's version of the event, refinement of the formulation of the test questions, and preparation of the examinee psychologically for the administration of the polygraph test, including the dissolution of any anger and the promotion of confidence in its impartiality and reliability. Furthermore, the actual examination should be conducted without emphasis on a particular question. In fact, all test questions should be asked in a statement like manner where the tone remains the same or drops at the end of the question, not rise in a questioning manner which might be interpreted as disbelief. This is consistent with the theme portrayed during the pre-test interview. I advise all examinees at the beginning of the pre-test interview that I assume that each examinee is innocent of the crime for which he or she is being polygraphed, until and unless the total scores from their polygraph charts indicate deception. As further corroboration, I sometimes relate to the examinee a true case of another examinee who

was identified by two victims and a witness, nevertheless produced truthful polygraph charts which were confirmed with blind scoring by another polygraphist, resulting in dismissal of the charges. The scoring of the polygraph charts is briefly explained to the examinee and the examinee is shown the scoring sheet containing the Conclusion Table as further evidence of the objectivity of the examination. The examinee is advised that after the polygraph charts in all issues to be tested have been administered, then they are taken into the next room for quantification at which time a determination is made as to truth or deception regarding each issue tested. Therefore, the examinee should not ask the polygraphist about the results of his charts until they have all been conducted and scored. It is further explained to the examinee that the polygraphist's concern during the administration of the polygraph test is to obtain clear, readable charts, where the examinee followed all instructions and refrained from movement during the test and answered all of the test questions after they were asked in their entirety. His answers were expected to be consistent with his answers during the pre-test review. (Familiarity with the test questions will sometimes prompt the examinee to give his answer while the question is still being asked.) The intended effect of withholding the chart results until all charts have been administered is to preserve the examinee's anxiety level towards the relevant questions if guilty, or toward the control questions if innocent, throughout each chart until all test charts have been conducted. Furthermore, the announcement of chart results before all charts have been administered could alter the examinee's psychological set on subsequent charts. To inhibit any attempt at countermeasures the examinee is advised that Innocent examinees want the instrument to produce accurate results therefore will cooperate fully and follow all instructions to the letter. Conversely, the guilty examinee does not want the instrument to produce accurate chart results therefore will attempt to prevent exposure of his guilt by not adhering to instructions such as subtle movements during the test. The examinee is also told of the sensitivity of the polygraph instrument which permits the polygraphist to notice a mere swallow on the polygraph chart. Furthermore, only a guilty examinee would deliberately violate instructions, and that is as obvious as waving a red flag.

The aforementioned pre-test procedure precludes any attempt to obtain a confession until all polygraph charts have been conducted and a determination of deception has been derived from the quantified chart scores. This requires self-discipline, especially when confronted with verbal and non-verbal behaviors normally associated with non-truthtelling styles. But to yield to the temptation can destroy the examinee's trust in the polygraphist's impartiality and faith in his objectivity which in my view can cause a serious shift in the Innocent examinee's psychological set (from the control questions to the relevant questions), which may be proportional to the intensity of the interrogation and the sensitivity of the examinee. A serious challenge to the validity of the ensuing polygraph charts could be made in such a circumstance.

The likelihood that such a non-accusatory pre-test interview would increase the potential for false negatives is not supported by research (Matte & Reuss, 1989) wherein thirty-nine (39) confirmed cases were conducted for defense attorneys under attorney-client privilege and thirty-four (34) of those were scored deceptive, three (3) were found truthful, and two (2) were

inconclusive. It should be remembered that a guilty examinee is far more likely to yield a confession after being confronted with his polygraph scores, especially from a polygraphist who maintained his impartiality and objectivity. Another factor which enhances the credibility of the polygraphist is his bridge building rapport with the examinee. On the other hand, a premature interrogation could burn that bridge.

Quadri-Zone Methodology

We will now examine the methodology used in this review, presentation and assurance of intended interpretation of test questions in a single-issue test format, the Quadri-Zone Comparison Technique.

The following format reflects the order in which the test questions are asked during the polygraph test. After the first chart, relevant questions 33 and 35 are switched in their position in each subsequent chart, to allow each relevant question to be compared against each control question. The order in which the test questions are reviewed with the examinee are as follows: 39, 33, 35, 46, 47, 23, 24, 14J, 25, 26.

Type	No.	Question
Y	14J	Were you born in the United States?
YR	39	Regarding whether or not you stole that $5,000.00 deposit discovered missing from the sale at ABC Market, 999 Sunset Avenue, Buffalo, New York at 4 Jul 93: Do you intend to answer truthfully each question about that?
B	25	Are you completely convinced that I will not ask you an unreviewed question during this chart?
G	46	Between the ages of (18) and (24) - Do you remember ever stealing anything?
R	33	Did you steal that missing $5,000.00?
G	47	During the first (18) years of your life -- Do you remember ever stealing anything from someone who trusted you?
R	35	Regarding the $5,000.00 deposit discovered missing from ABC Market on 4 Jul 93, did you steal that money?

GW	23	Are you afraid an error will be made on this test regarding the target issue?
RW	24*	Are you hoping an error will be made on this test regarding the target issue?
B	26	Is there something else you are afraid I will ask you a question about, even though I told you I would not?

Question Types

Relevant Question (Strong)	R	|	Exclusive Control Question	G	
Relevant (Variable strength)	RW	|	Control (Variable strength)	GW	
Relevant (medium strength	RY	|	Relevant (Weak)		YR
Symptomatic (Outside issue)	B	|	Neutral (Irrelevant)		Y

* NOTE: In the past, I used the word "Hopeful" at question 24 because it was grammatically correct, but have substituted the word "hoping" because it is more easily understood and appears to be more effective. [Author.]

Test Question Review - The Sacrifice Relevant

Test question number 39 is the first test question that is reviewed with the examinee. It is structured as a weak relevant question which serves as both a Sacrifice Relevant Question and also as a Preparatory Question for the introduction of the two strong relevant questions (33 and 35), hence a dual purpose question. The manner in which this weak relevant question is introduced as a Preparatory Question for the two strong relevant questions assures its function as a Sacrifice Relevant Question.

I first read question 39 to the examinee in its entirety, than await the response. After acquiring an affirmative answer from the examinee I then state: "I have identified the issue for which you are being tested and I'm asking you if you intend to answer truthfully each question about that, isn't that correct?" to which I should obtain an affirmative answer. Then I state to the examinee: "The next test question is short and to the point", then I read question #33, to which I should obtain a negative answer. I then state to the examinee, "The next test question is the same question, it is just worded differently and is a bit longer." then I read question #35, to which I should obtain a negative answer.

Inasmuch as question #39 is a Sacrifice Relevant question, I can afford to make it long without fearing its consequences because it is not considered or scored for a determination. I therefore use this question to fully identify the matter being tested. Because this question serves as a Preparatory question for the introduction of the two strong relevant questions, the next and first strong relevant question can be very short without fear of misinterpretation or rationalization. This eliminates mental exercise as a possible cause for a physiological response to that test question.

Relevant Question Review

Test question #35, which is the second strong relevant test question, identifies the issue sufficiently to avoid the potential for examinee rationalization but not necessarily as long as question #39. It should be noted that the question, "Did you steal that money?" is located at the end of question #35 for effect.

In reviewing relevant question #35, it is explained to the examinee that the amount of money reported missing from the safe may be slightly different than the amount actually stolen, therefore the amount quoted is merely to identify that theft of that deposit of money discovered missing from ABC Market on that particular day. If the examinee did in fact steal that deposit of money, regardless of the amount, they will respond on the test. This explanation is designed to avoid rationalization on the part of the examinee, as well as obtaining feedback of his or her understanding and interpretation of the test question.

Rationalization

The issue of rationalization must not be underestimated. Generally, relevant test questions should be the easiest to understand and interpreted inasmuch as they deal directly with the issue(s) for which the examinee is being polygraphed, which have been thoroughly discussed during the pre-test interview. However, guilty examinees (as later verified) must not be given an opportunity to answer the relevant test question truthfully yet be guilty of the offense, because of a technically or grammatically incorrect question.

An example of effective rationalization occurred in 1969 while I was assigned as a U.S. Army C.I.D. Agent at Fort Dix, New Jersey. Someone threw a grenade into the parking lot of the Philadelphia Police Department causing damage to police vehicles. Several polygraphists from the Philadelphia Police Department were authorized and conducted polygraph tests at the Fort Dix C.I.D. Offices on Army enlisted personnel assigned to the ordnance section. After polygraphing a number of soldiers without identifying the perpetrator, one soldier produced responses to the Knowledge question and subsequently identified the perpetrator whom it was learned had already been polygraphed but had failed to show responses to the relevant questions. That suspect was reinterviewed which resulted in a confession. It was then learned that the civilian police polygraphists, unfamiliar with U.S. Army ordnance, had used the wrong grenade

classification in the wording of his relevant questions, which enabled the suspect to answer the relevant questions truthfully, yet was guilty of the crime. He would have been better off if he had simply used the word "grenade" without adding its numerical classification.

Sacrifice Relevant Question Effect

As testimony to the effectiveness of the Sacrifice Relevant Question #39 in its described role, I offer this incident which occurred at my polygraph office in 1991. An adult make was polygraphed by a law enforcement agency regarding the commission of a crime, but the results were inconclusive. Before submitting to a retest by the police, his new attorney decided to have him tested privately and brought him to me. I administered the Quadri-Zone Comparison Technique consisting of a Stimulation Test followed by four separate charts dealing with the same issue. Each chart was scored as follows: Chart 1 was -10, Chart 2 was -2, Chart 3 was -13, Chart 4 was -8 for a total score of -33. For the Quadri-Zone System, a minimum score of -20 for 4 charts is required before a definite conclusion of Deception can be rendered. A minimum score of +12 for 4 charts is required before a definite Truthful conclusion can be rendered. The suspect was confronted with the results of his polygraph test and after some interrogation the suspect confessed to the crime. During his explanation of the details surrounding the commission of the crime, the suspect, still sitting in the polygraph chair, reached down and unlaced his right boot, took off the boot and removed the insole. From the tip of the insole the suspect calmly removed a thumbtack from the toe area and placed it on the polygraph desk. The tack would most likely have escaped detection because it was in the insole which required pressure for the tip to surface. The suspect stated that he had read a booklet that told how to beat the polygraph, primarily by controlling his breathing and placing a tack in his shoe. I asked the suspect which questions did he press his toe on the tack and the suspect replied, "to all of the test questions except the two relevant questions." However, he did not use that countermeasure on the stimulation test. Using these countermeasures, he had successfully caused an Inconclusive result in his first polygraph test administered by the police, but in spite of his success and practice, his countermeasures failed to defeat the Quadri-Zone Comparison Technique. The suspect apparently only considered the two strong relevant questions (#33 & #35) as worthy of consideration. This is most likely because of the manner in which the Sacrifice relevant question is presented to the examinee as a Preparatory question to the two strong relevant questions.

We have so far reviewed the Sacrifice/Preparatory Relevant question (39), and the two Strong Relevant questions (33, 35) with the examinee.

Control Question Review

The next series of test questions which are reviewed with the examinee are the earlier-in-life exclusive control questions numbered 46 and 47. The term exclusive is used to identify

control questions that exclude the period in which the crime was committed through the use of a time bar. They are reviewed with the examinee in the following manner:

> The next two questions are very important because some people are very sensitive about being asked questions that deal with stealing (Use issue being tested.) because of incidents that occurred in their early childhood, or perhaps later on in life, for which they now want to be punished. A psychologist would label a person like that a guilt complex reactor, which can play havoc with the test, so it's equally important that you be truthful to these two questions as I presume you have been to the others we have just reviewed.

Please note that I used the word others, not three others, to avoid the inclusion of the Sacrifice/Preparatory question 39 in that category. This is to have the two controls compete against the two strong relevant questions 33 and 35, by the examinee's own selection.

The polygraphist should tailor the above preamble to suit the issue being tested and his own style of question presentation. The idea is to make those two control questions important to the examinee, in that he or she wishes to be truthful but is reluctant to make admissions to crimes similar to the crime for which the test is being conducted for fear that it will reflect unfavorably on the claim of innocence to the target issue. This creates a conflict which should arouse a proportional response on the test. You would think that most examinees when confronted with the control question "Between the ages of ( ) and ( ) do you remember ever telling a serious lie?" would give an affirmative answer. However, when it is prefaced with the preamble, "Your credibility is at stake here, isn't it? (regarding the target issue) Are you a truthful person?" The examinee does not wish his or her credibility diminished by giving an affirmative answer to the control question. Over the years, polygraphists have developed several successful and effective preambles for the introduction of control questions. The primary objective is to elicit a negative answer from the examinee to control questions that the examinee feels are important to the outcome of the polygraph test.

During this review I am holding a clipboard containing the worksheet with test questions. This clipboard is held up in a manner which prevents the examinee from seeing what I am writing. It has been my experience that examinees are generally not bothered when I am writing with the clipboard in that position. But when I drop the top of the clipboard down so that the examinee can readily see pen on paper, he or she becomes apprehensive, cautious and less talkative. The importance of this procedure will become obvious in a moment.

I now present and review control question 46 with the examinee. "Between the ages of 18 and 24, do you remember ever stealing anything?" If the examinee starts to make admissions, the polygraphist should immediately express facial surprise, drop the top of his clipboard down while moving closer to the examinee and in a deliberate manner slowly and reluctantly start to write down the examinee's admission(s). This usually has the effect of stopping the examinee

from making further admissions. The test question then is amended and reviewed with the examinee, as follows: "Between the ages of 18 and 24, besides what you have already told me, do you remember ever stealing anything?" The examinee should then provide a negative answer. The polygraphist should then quickly proceed to the review of the next control question, number 47.

I now present and review control question 47 with the examinee. "During the first (18) years of your life - Do you remember ever stealing anything from someone who trusted you?" Please note that this second control question deals with a different period of the examinee's life than control question 46 and the latter part of the question specifies "from someone who trusted you?" which is also different from control question 46. This difference in time-period and question syntax between control question 46 and 47 is essential for each control question to produce and maintain its independent, equally productive mental exercise and conflict. I have noted that some polygraphists use the same age category and question for both control questions, which is therefore the same control question repeated in the same test. This in my view promotes habituation and significantly diminishes the mental effort and resultant conflict not only in the second control question but in subsequently administered charts.

Another example of different control questions within the same category, used for sex offenses, are set forth below:

46. Between the ages of (18) and (24) - Do you remember ever engaging in an unnatural sex act?

47. During the first (18) years of your life - Do you remember ever doing anything sexually that you're ashamed of?

The above control questions are within the same category (sex) but are different in time period and question type. They are also appropriate for their respective age categories.

A legitimate concern may arise when a polygraphist is assigned the task of polygraphing someone who is thoroughly familiar with the polygraph technique and its instrumentation, especially if the examinee is a polygraphist. The polygraphist conducting the polygraph examination might be apprehensive about his effectiveness in eliciting a negative answer to the control questions from such an examinee and of equal importance, will the control question(s) be effective as a competitor to the relevant question(s) on the same test. I have personally conducted numerous polygraph tests on examinees knowledgeable about the polygraph technique without experiencing any difficulty, and I have further conducted polygraph tests on polygraphists facing serious criminal charges resulting in conclusive results in each case. Once case resulted in a truthful conclusion which was later verified by the conviction of another suspect.

The theme of the pre-test interview must be not only non-accusatory but also contain the presumption of innocence. This theme nourishes the examinee's desire to present his best and most innocent image to the polygraphist, which in turn will inhibit the examinee from disclosing unfavorable information during the review of the control questions that would tarnish that image.

The primary concern of a polygraphist facing the above situation is to develop control questions that are intimately connected to the relevant questions. For the examinee to make an admission to such a control question would appear to significantly increase the likelihood that the examinee committed the crime for which he is being polygraphed. In addition, the witnessing of the examination by the defense attorney or prosecutor or both as the case dictates, with the full knowledge and consent of the examinee, should further inhibit the examinee from making admissions to control questions intimately connected to the crime. An example of control questions successfully used in such a case is set forth below:

Case: Male examinee accused of having sexual intercourse with his daughter who was under 16 years of age.

46. Between the ages of (18) and (28) - Do you remember ever thinking of having sex with anyone under the age of 16?

47. During the first (28) years of your life - Do you remember ever thinking of engaging in a sex act with anyone under the age of 16?*

[*Note: The word anyone includes both sexes increasing the probability. The word child could be used instead of anyone to further inhibit the examinee.]

Case: Male examinee accused having his underage daughter ejaculate him.

46. Between the ages of (18) and (35) - Do you remember ever being sexually aroused by anyone under 14 years of age?"*

[*Note: Initially 16 years of age was used but the examinee started to make an admission at which time it was quickly dropped to 14 to which he gave a negative answer.]

47. During the first (18) years of your life - Do you remember ever doing anything sexually that you're ashamed of?

An experienced and noted polygraphist once told this author that he was reluctant to use sex control questions in sex offenses due to their strong arousal and false negative potential. However, I have had no such problem, especially with the Quadri-Zone Technique, which assigns

a minus one score when both the control and relevant questions elicit strong but equal responses in the pneumo and cardio tracings. We should remember that a sex offense, especially with children, carries an enormous social stigma, nearly indefensible, which can significantly increase the emotional content of the relevant question(s). Therefore, strong control questions must be used to compete with such emotionally charged relevant questions to protect the innocent.

Review of Error Questions

We now proceed to the review of test questions 23 (fear of error) and 24 (hope of error). During the pre-test interview, the examinee was apprised of the accuracy of the polygraph instrument and the objectivity of the technique with its numerical scoring system of chart analysis by explanation of the various instrument recording components, and the results of research data supporting the numerical scoring system. It is hoped that the examinee now feels sufficiently confident about the accuracy of the test to furnish a negative reply to the following control question which is introduced as follows:

> I've explained to you about the accuracy of this test and that no errors will be made; the worst that can happen is that the results will be inconclusive which means that neither a finding of truthfulness or deception could be established from your polygraph charts, and that happens in only six percent of the cases. Now are you afraid an error will be made on this test regarding the target issue?

The term "target issue" is then explained to the examinee and feedback from the examinee is acquired for assurance that the term was clearly understood.

If the examinee answers "no" then ask the examiner why he or she is not afraid that an error will be made on this test. The usual explanation will be because they believe in the accuracy of the test and the expertise of the polygraphist. But sometimes you may get explanations that do not correspond to the intent of the question, such as: "Because I'm innocent, I didn't do it." or, "I'm afraid you might make an error and not catch the person who did do it."

The latter explanation indicates that the person completely misinterpreted the intent of the question. In such case it is explained to the examinee that the question is directed at the examinee only. As to the statement, "Because I'm innocent," it should be explained that the fact that they may be innocent has no bearing on the accuracy of the test; that it is the accuracy of the instrument and the expertise of the polygraphist that effects the accuracy of the examination. That way, the examinee will not have a total lack of fear of error based on the erroneous assumption that an error can't be made because he or she is innocent. Thus the examinee will be left with some small potential for an error to be made, but not enough to resist giving a negative answer to that question. The Innocent examinee should therefore provide some physiological reaction that control question versus its neighboring relevant question #24.

When an examinee provides an affirmative answer to control question #23, the polygraphist points out to the examinee that he gave a vote of confidence by accepting their claim of innocence until all charts have been conducted, therefore, the polygraphist is asking their vote of confidence in his expertise and the accuracy of the instrument until all charts have been conducted, by giving a negative answer to that question. This author cannot remember when he was not able to obtain a negative answer from an examinee to control question #23, even from polygraphists tested. If an examinee insists on giving an affirmative answer to question #23, the polygraphist has two choices. The first one is to direct the examinee to give a negative answer to that question. The second option is to accept the examinee's affirmative answer. It has been my experience, and that of other polygraphists experienced in the use of this technique, that both options worked well because the verified guilty examinee still responded more profoundly to the neighboring relevant question #24.

Some examinees initially voice their poor opinion regarding the accuracy of the polygraph based on reports from the news media and from "friends" who "failed" their polygraph test yet were truthful. All of these unfavorable opinions can be easily countered in an amiable fashion by producing abstracts from various research papers an other data supporting the high validity and reliability of the polygraph, which will add only a few minutes to the pre-test interview.

We now proceed to the review of relevant question #24 as follows. The examinee is now told, "The next question I expect everyone to answer "no" to, but the guilty person's "no" answer, of course, will be a lie." Relevant question #24 is now read to the examinee, "Are you hoping an error will be made on this test regarding the target issue?" This will undoubtedly produce a negative answer. However, the polygraphist should be on the alert for misinterpretation of that question. It is especially important that the examinee realize that this question is directed at the target issue (not the control question(s) he is probably lying to). I have heard examinees reply, "I hope there's no error made." Now they have made up their own question. They should be immediately corrected and the question repeated in its entirety with a thorough explanation of the question. Then get feedback from the examinee as assurance that the question was interpreted as intended and designed.

Review of the Neutral Question and Symptomatic Questions

We now review Neutral (Irrelevant) question #14J with the examinee. "Were you born in the United States?"

After that, the examinee is advised, "These are the only questions you will be asked on this test. I'm giving you my word which is my bond that I will not ask you any questions except those that I have just reviewed with you, and in order for me to be assured that you are convinced of this, I'm going to ask you the following two questions on the test also." Now Symptomatic Question #25 is reviewed with the examinee, and if the answer is affirmative and the polygraphist is confident through feedback that the examinee clearly understood that question,

then he proceeds to review Symptomatic Question #26 which should also elicit a negative answer, but may require some discussion with the examinee. Sometimes these symptomatic questions need to be reworded into a simpler form to accommodate examinees with limited command of the English language.

Conclusion

In conclusion, the principles enunciated in the above review, presentation and assurance of intended interpretation of test questions are applicable to all control question tests, but its administration if flexible. The above format is presented as a logical and successful method of preparing an examinee psychologically for the administration of a control question polygraph test.

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THE USE OF ALTERNATIVE OPINIONS

IN THE POLYGRAPH TECHNIQUE

By

Brian C. Jayne

While most examiners would agree that the polygraph is not a "lie detector," and that there is no such thing as a "lie response," the inferences an examiner draws from a subject's chart responses are typically reported in one of three ways--deception indicated (DI), no deception indicated (NDI), or inconclusive (INC). Common sense tells us that when a subject answers "no" to a specifically worded question, e.g., "Did you shoot John Doe?" his answer must be either the truth or a lie. However, from a psychophysiological sense, by reporting as DI, for example, every subject who exhibits a greater emotional focus to the relevant than control questions, the examiner may be ignoring the possibility of factors other than deception causing that emotional focus; in effect, the examiner is using the polygraph as a "lie detector."

Apart from obvious intrinsic emotional states such as anger, resentment, or frustration, there are other circumstances which can cause a truthful subject to emotionally focus to relevant questions. For example, consider that the issue of an examination addressed whether or not the suspect started a particular fire. Further, that the suspect's chart responses indicate a focus of emotional attention to the relevant questions. However, during a post-examination interrogation the suspect adamantly denies starting the fire under investigation, but does admit setting a different fire which was not addressed during the examination. Upon eliciting this admission, the examiner is placed in a quandary--The suspect could be "throwing the examiner a bone" and be guilty of starting the fire under investigation, or, on the other hand, be innocent of starting that fire but have responded significantly to the relevant questions because of a psychological set focused around the fire he admitted starting. Some examiners are so convinced of the technique's infallibility that they will blindly abide with chart interpretation and report this subject DI. But perhaps a more prudent and accurate opinion would be that the subject is either not telling the truth to the issue under investigation or to a related issue. The examiner, of course, would suggest a re-examination to help clarify the opinion.

This example illustrates a dichotomy of detection of deception philosophies. Is an examiner retained to render the most accurate diagnosis possible regarding a subject's truthfulness, or is it the examiner's role to simply report his or her interpretation of polygraph charts? At first glance this distinction may not be apparent. Consider, however, that a robbery

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subject who was picked up based on eyewitness identification expressed a great deal of anger and resentment during an examination. Further, despite this subject's apparent truthful verbal and nonverbal behavior, his polygraph charts indicated much more emotional attention to the relevant than control questions. If the examiner is merely a chart interpreter, the subject should be reported as DI--even though that opinion may be incorrect. On the other hand, if the examiner's role is to render the most accurate opinion possible, the examiner should report this subject as inconclusive because experience demonstrates that legitimate anger can cause false positive errors. In this light, most examiners would agree that their role is to render the most accurate diagnosis possible. Yet, by limiting opinions to DI, NDI or inconclusive, examiners may be unnecessarily forced into rendering opinions which are not the most accurate.

If the polygraph technique directly measured a specific phenomenon the results could always be reported dichotomously. That is, litmus paper changes color specifically as a function of pH; comparative forensic techniques will produce either a match or no match; an agglutination test will indicate either the presence or absence of antibodies within a sample. The polygraph technique, however, is an inferential procedure that does not measure deception at all. It provides data upon which to base an inference of truth or deception. It is naive to believe that these inferences can always be made dichotomously with the same degree of confidence. Under some circumstances, examiners should consider rendering alternative opinions which take into consideration possible variables which may have affected the focus of the subject's attention during an examination.

The reluctance of the polygraph profession to deviate from definitive opinions of truth or deception is largely due to an effort to preserve the image of the polygraph as a "lie detector." This is most evidence when examiners proudly profess to rendering opinions independent of auxiliary information, such as investigative case facts, the subject's verbal and nonverbal behavior, or admissions elicited from the subject following an examination. These examiners incorrectly believe that if opinions are based strictly on psychophysiological responses the error rate of the procedure is somehow reduced. However, it is precisely the utilization of auxiliary information that distinguishes between an examiner who merely reads charts and one who renders the most accurate opinion possible. This diagnostic procedure is termed "global evaluation."

Global Evaluation

If it is accepted that the polygraph instrument does not measure truth or deception, the inferences drawn from a subject's psychophysiological responses involves two separate evaluations:

(1) To which question type of question, relevant or control, is the subject's focus of emotional attention?

(2) What is the cause of the subject's focus of attention?

The first evaluation merely requires objective and reliable chart interpretation skills which can be currently done by a computer. Evaluating why a subject's attention was so focussed during an examination, however, requires a separate and distinct skill. When an examiner reports a subject as DI, for example, what is being implied within that opinion, but never stated, is that the examiner has eliminated all variables other than deception to the relevant questions as being the cause for the subject's focus of attention.

Polygraph training courses spend a considerable amount of time addressing various factors which are known or believed to affect the reliability and validity of a subject's chart responses. Some of these are procedural in nature which the examiner can essentially control, e.g., examination environment, instrument calibration, issue selection, pretest conditioning, question formulation, chart recordings, chart interpretation, etc. Unfortunately, many polygraph examiners operate under the misperception that by merely following proper procedures a subject's responses will always accurately reflect their truthfulness, or at least will do so in 90% of the cases. This belief ignores a multitude of additional factors which fall outside of the examiner's control. In their 1977 text *Truth and Deception*, Reid and Inbau devoted 64 pages (20% of the polygraph related chapters) to these types of variables. Examples include variations within a subject's psychological makeup (emotional states, motivation, intelligence, socialization, etc.), the validity and clarity in the development of the subject's psychological set, ingestion of drugs or medication, the subject's physiological condition, as well as emotional and mental health. These factors are not always apparent. In some subjects they remain latent or do not surface until after an accusatory interrogation. Once such a factor is recognized the examiner must then estimate what potential effect the variable may have had on chart responses. That is, if two truthful subjects who are both suffering from depression are administered an examination in exactly the same manner investigating the same issue, one subject may produce "truthful" charts while the other may produce "deceptive" charts; two subjects, one of whom was truthful and the other deceptive, may both claim to experience guilt through negligence, a factor known to cause false positive results, and yet both may produce "deceptive" polygraph charts. The question, precisely stated, is how can an examiner assess whether or not an intrinsic variable may have affected the focus of a subject's emotional responses? It should be emphasized here, that no research exists which supports the improbable notion that an examiner, relying on analysis of chart responses or the use of specialized questions, can state with certainty whether or not extraneous variables influenced a subject's focus of attention.

It should be of some comfort to know that the polygraph technique is hardly unique in this regard. It is difficult to name any psychological or medical diagnostic procedure which is not affected by extraneous variables. One way psychologists and medical doctors identify whether or not extraneous variables may have affected the accuracy of a primary test result is to evaluate the patient from multiple perspectives. When this procedure is utilized in the polygraph technique it is termed global evaluation. While the concepts involving global evaluation have been presented elsewhere in more detail (Reid 1980, Mullinex & Reid 1980, Slowik 1982), as well as the validity of the procedure (Wicklander & Hunter 1975, Buckley 1987), it may be

beneficial here to look at how other professions utilize a global evaluation approach in their diagnostic procedures.

A polygraph examination is correctly described as a psychological procedure and is, in many ways, similar to other psychological tests such as the MMPI in that neither instrument makes a direct measurement of the indices of assessment (truth or deception, psychopathology) and both procedures have a known error rate.[1] When a psychologist administers an MMPI the results are presented in numerical form. To infer the meaning and validity of these results, however, the psychologist must first determine whether or not the test was administered and scored properly (proper test instructions, room environment, proper selection of scoring templates, etc.). The psychologist will then interview the patient. Historical data is elicited (medical history, family history, education, interpersonal relationships, etc.) and productive tests may be administered. These assessments are evaluated in conjunction with the MMPI results. During this interview the psychologist will also elicit and observe the patient's current symptoms (attitude, affect, demeanor, anxiety state, use of defense mechanisms, etc.) and will consider that information in conjunction with the MMPI results. The ultimate opinion, therefore, represents a global evaluation, e.g., the MMPI indicates a high score for psychopathy, the subject has a history of antisocial behavior, and appears glib and lacks remorse when discussing how his past behavior has affected others--because all assessments support each other, the psychologist has high confidence in reporting the subject consistent with the MMPI results. However, because of multiple assessments it is possible for two patients to have identical scores in every scale on the MMPI and yet ultimately have different diagnoses.[2]

In a similar manner, one of the first considerations a polygraph examiner makes is to evaluate the environment in which the examination was conducted, the subject's medical and psychological suitability for the examination and an assessment is made whether or not variations from "ideal conditions" may be a factor affecting test results. The examiner also obtains and evaluates investigative information about the subject and the crime he is suspected of committing (social history, opportunity, access, motivation, propensity, physical and circumstantial evidence). Through evaluation of investigative information, the examiner can frequently form an opinion of whether or not truthful or deceptive polygraph charts would be consistent or inconsistent with these findings. During a pretest interview the examiner elicits verbal and nonverbal behavior

[1]While the polygraph technique represents a psychological procedure in the sense that psychological processes are involved in the measurements, it is not a psychometric test. This distinction is important because psychometric tests are designed to avoid any manipulation of independent variables, e.g., test questions, subject motivation, test selection, special scoring considerations, etc.

[2]The clinical information describing the interpretation of the MMPI for psychopathological diagnosis, while over-simplified, was provided by Dr. Paul Glass, a practicing psychologist in Waukesha, WI.

symptoms from the subject and evaluates those behaviors in the context of truth or deception.[3] Finally, the subject's physiological responses on polygraph charts are evaluated with respect to truth or deception.

When all three of these evaluations are in agreement, the examiner has a high confidence in reporting the subject consistent with chart analysis. In other words, there is no reason to believe that extraneous variables may have affecting the subject's focus of attention during the examination because all assessments are consistent. However, when there are inconsistencies within the three assessments, the examiner first attempts to resolve the inconsistency, perhaps by clarifying investigative information, administering specialized polygraph tests, or interrogating the subject. If these efforts are unsuccessful, the examiner must be cautious in blindly abiding by polygraph chart responses, and may consider rendering an inconclusive opinion or one which is less definitive than DI.

To illustrate how global evaluation assists in evaluating whether or not a variable affected a subject's response, consider that investigative information, the subject's behavior symptoms, and polygraph charts all support a deceptive opinion. However, this subject also expressed resentment during the examination. Because all three analyses are consistent and fit together, the examiner would be confident that the responses to the relevant questions, in all probability, were the result of deception rather than resentment and consequently report the subject as DI. On the other hand, had investigative and behavioral information been more indicative of truthfulness, the examiner would then have to consider the possibility that the subject's focus to the relevant questions was the result of resentment rather than deception, and an inconclusive opinion may be more appropriate.

This illustrates an important concept--Global evaluation is not used to reverse an opinion based on chart responses. It is used to identify the probability that chart responses accurately reflect the suspect's truthfulness, and ultimately to decrease the probability of an erroneous diagnosis. At most, the examiner may modify his opinion based on global evaluation.

The Use of Alternative Opinions

At this point the need to deviate from the standard DI, NDI, or INC opinions generally rendered by polygraph examiners may still not be apparent. After all, one could argue, if global evaluation is not consistent with a subject's chart responses, an inconclusive opinion could always be rendered. While this is certainly true, in some of these situations an inconclusive opinion may not be the most accurate opinion an examiner can render. In addition, many polygraph examiners have an almost pathological aversion to rendering inconclusive results. For instance, there are examiners who cite, as an indication of their expertise, a low (1-5%) inconclusive rate. The use

[3]There is a growing body of literature which supports the validity of opinions based on field analysis of verbal and nonverbal behavior (Horvath, 1973; Horvath & Jayne, 1990).

of alternative opinions allows an examiner to offer insight to the suspect's truthfulness without unnecessarily risking an error (or loss of esteem by reporting the subject inconclusive).

Reid and Associates utilizes many possible opinions other than DI, NDI, or INC. Approximately 10% of our opinions are inconclusive, 65% are DI or NDI, and 25% represent alternative opinions. To illustrate possible alternative opinions, the following paragraphs provide a brief synopsis of a case description along with the examiner's opinion.

Generally Not Truthful

A subject was tested with respect to having sexual contact with his 5-year-old step-daughter. Two relevant questions investigated vaginal intercourse while the third investigated putting his penis in her mouth. While the step-daughter "demonstrated" vaginal intercourse on a doll, a physical examination of her genitalia was inconclusive with respect to penetration. The step-father's polygraph charts indicated an inconsistent focus between the two relevant issues, and no focus to the control questions. Consequently, a report format referred to as "generally not truthful" was used:

> There were general indications of deception throughout this subject's polygraph charts when asked the relevant test questions listed above. Because of the general nature of these responses it is the examiner's opinion that the subject is not telling the truth to one or more of the above listed questions.

Following the subject's examination he changed his story considerably and explained that because he sleeps in the nude and that his step-daughter is sometimes in bed with him, his penis may have touched her mouth on one or two occasions.

General Deception

Someone entered a fast food restaurant after closing and stole $5600 from the safe. All managers who had keys to the building and the combination to the safe were administered a polygraph examination to investigate whether or not they stole the $5600 or had knowledge regarding the theft. The fifth subject tested in this case produced clearly deceptive records. During a post-examination interrogation the subject admitted stealing $250 in other money from the restaurant, but denied any involvement in this specific burglary. A report format referred to as "general deception" was utilized:

> There were erratic and inconsistent deceptive responses to the relevant test questions listed above. It is the examiner's opinion that the subject is either not telling the truth about his involvement in the theft of $5600 from the safe, or to a matter similar in nature to the issue under investigation.

Another manager who was subsequently tested also produced deceptive records. This manager had been implicated by several previously examined employees because of his known use of illegal drugs, which he denied. In addition, following the theft he failed to come into work and later lied about the reason for his absence. He was reported as DI to all relevant questions and subsequently confessed to the $5600 theft.

Purposeful Non-Cooperation[4]

A Chicago politician was accused of "shaking down" bar owners. The allegation was that he threatened several tavern owners with the loss of their liquor licenses unless they paid him a sum of money. During his examination the subject had a normal respiration rate (as recorded between tests)[5] of 18 breaths per minute, but, despite cautions, slowed his respiration to 10 breaths per minute during each test including a "Yes Test". Factual and behavioral analysis clearly indicated his deception (he had been indicted by a Joe Doe hearing but, at the time of the examination which was after the indictment, he had not yet told his wife about the allegations). Due to the manipulated respiratory rate, a report referring to this distortion activity was used:

> Throughout the course of this subject's polygraph examination he attempted to distort his respiratory pattern which precludes the examiner from rendering a definite opinion of truth or deception on the subject's answers to the above listed questions. However, it has been the experience of this laboratory that subjects who engage in such acts of non-cooperation are generally not telling the truth to one or more of the relevant questions asked during the examination.

Purposeful Non-Cooperation-Inconclusive

A clothing store reported the theft of a $2000 deposit. There were two employees who had access to the deposit. The first was a young woman who was recently hired. During her examination she expressed apprehension and also indicated that she was undergoing therapy for depression and had attempted suicide within the last year. She had much poorer access to the deposit than the other employee and because of this, was examined first. During her examination she was breathing 22 breaths per minute between tests but slowed her respiration down to about 11 breaths per minute during each test, including the Yes Test. This pattern continued even after she was cautioned about regulating her breathing. The subject acknowledged slowing her breathing down to maintain "control" during the examination. Due to her questionable emotional

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[4]The opinion of purposeful non-cooperation requires much more than subject merely decreasing respiratory rates or contracting muscles during an examination. The specific diagnostic criteria for this opinion can be found in Jayne, B. (1981) Purposeful non-cooperation: A diagnostic opinion of deception. *Polygraph*, 10(3), 156-174.

[5]In the Reid Technique the kymograph is left running between tests to record the subject's "normal" respiration rate.

stability it could not be established whether the effort to regulate her respiration rate was a legitimate effort to calm herself, or an effort to distort the recordings to mask deceptive responses. Consequently, she was reported as inconclusive:

> Throughout the course of this subject's examination she decreased her normal respiratory rate which precludes a definite opinion to the above listed questions. Because of this, no opinion can be rendered with respect to this subject's truthfulness at this time.

The second employee, who was the manager, exhibited minimal arousal to any question during control question tests but engaged in specific acts of purposeful non-cooperation to relevant questions during a "Yes Test' and, because of this, was interrogated. Following the examination she confessed to stealing the $2000 deposit.

Qualified Opinions

A 12-year-old boy was examined as a witness to a theft. He claimed to observe his natural father steal a truck from a farm where he was living with his mother and step-father. Factual and behavioral analysis each indicated truthfulness, as did his polygraph charts. However, due to his age, the examiner qualified the opinion because there is little research indicating the validity of the polygraph technique on children:

> There were no indications of deception to the above listed questions. It is the examiner's qualified opinion that this subject is telling the truth to these listed questions. The qualification in this report is due to the subject's young age as a polygraph subject.

A qualification is included in a report to alert the client that some aspect of the examination was not typical. It may be something about the subject, the examination environment, or the issue under investigation. A qualification within a report serves two purposes. First, it brings to the client's attention that some aspect of the examination was abnormal, and perhaps not supported or investigated through adequate research. Second, the qualification indicates that the examiner took this factor into consideration when rendering an opinion.

Investigative Opinions

A woman was asked to take a polygraph examination regarding an alleged sexual assault by her live-in boyfriend. Since she acknowledged being intoxicated at the time, there was some doubt as to whether or not physical force was used during the intercourse. Her description of the assault was consistent with other investigative information and her verbal and nonverbal behavior during the pretest interview was indicative of truthfulness. In addition, the boyfriend

refused to take a polygraph examination. However, during her polygraph examination she exhibited significant responses to both the relevant and control questions. Due to the ambiguous responses, but in light of the favorable investigative and behavioral factors, she was given an "investigative opinion":

> The subject exhibited erratic and inconsistent emotional responses to the above listed questions throughout her examination. The erratic nature of these responses precludes the examiner from rendering a definite opinion based on the subject's polygraph chart responses. However, based on evaluating the investigative information available as well as the subject's behavior and demeanor during the examination, it is the investigative opinion of the examiner that she is essentially telling the truth to the incident under investigation.

As a result of the examiner's opinion, the investigation focussed around the boyfriend who ultimately acknowledged "threatening" to use physical force against the victim, and pleaded guilty to a lesser charge.

Investigative opinions are reserved for situations in which we are consulted to provide guidance or direction to any investigation; rather than leave the status of a very probably truthful subject unresolved, an investigative opinion is rendered.[6] On the other hand, when an examination is specifically conducted for the purpose of seeking court admissible evidence based on physiological detection of deception, such as a stipulated examination or one conducted for a defense or prosecuting attorney, investigative opinions are not used. The reason for this, of course, is that in those situations the client is seeking admissible evidence, not simply a professional opinion of a suspect's truthfulness.

While this only provides a sampling of alternative opinions, each represents to the client our most descriptive and accurate determination of the subject's truthfulness based on their chart responses and our analysis of factors which may have affected those responses. As can be seen, if an examiner considers possible factors which may have affected chart responses, in some cases, an alternative opinion is more accurate than reporting the subject as DI, NDI or INC.

Conclusion

An examiner must accept that at a 90% accuracy rate, one subject in ten will produce conclusive polygraph records which do not accurately reflect their truthfulness. This is a statistical reality which polygraph users fully accept. What the general public does not realize

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[6]We will also report a subject as "investigatively deceptive". Typically this occurs when the subject's polygraph responses are inconclusive, but based on factual and behavioral information the subject was interrogated and confessed. Under this circumstance it would be misleading and unethical to render a DI opinion when, in fact, the charts do not indicate deception.

is that through global evaluation examiners can correctly identify a significant number of subjects whose polygraph charts fall within the 10% which are scored in blind studies as errors--Under field conditions, an examiner's accuracy is probably significantly higher than when blindly reviewing polygraph records. This, of course, is not the case if an examiner uses the polygraph as a "lie detector" and renders opinions relying exclusively on chart responses.

If, however, an examiner considers the polygraph technique as an inferential procedure to determine truth or deception, an emotional focus to the relevant or control question means nothing unless factors which may have affected that focus are taken into consideration. In medicine, psychiatry, engineering and forensic sciences when variables are identified which may have affected a test result, the practitioner's opinion indicates less definitiveness or confidence in the interpretation of those results. This hardly detracts from the practitioner's expertise. In fact, it augments it because the expert is perceived as someone who cannot only interpret test results but also estimate the test's probable validity.

A competent examiner is one who not only interprets polygraph charts reliably, but is also trained to recognize when chart responses may be affected by extraneous variables. In this regard, global evaluation is an effective and valid method to assist in identifying whether or not extraneous variables may have affected the subject's emotional responses. When there are unresolved inconsistencies within global evaluation, oftentimes the most accurate diagnosis is inconclusive, or some opinion less definitive than DI.

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HIRING STANDARDS:

ENSURING FITNESS FOR DUTY

By

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Constitutional and statutory principles impact on the hiring standards established by law enforcement agencies. Courts recognize the need for hiring standards that effectively ensure officers possess the physical, educational, emotional, and integrity qualifications to handle the challenges and stresses inherent in law enforcement employment.

This article specifically discusses the legal defensibility of the following hiring standards:

1) Physical fitness testing;
2) Educational Requirements;
3) Psychological testing;
4) Polygraph examinations; and
5) Criminal History assessments.

The general conclusion reached is that law enforcement administrators have considerable managerial prerogatives under State and Federal law to implement hiring standards and procedures to ensure officers are competent and fit for duty.

Physical Fitness Testing

The recent passage of the Americans With Disabilities Act[1] (ADA) and the Civil Rights Act of 1991[2] (CRA of 1991) makes it imperative that law enforcement agencies carefully identify the essential functions of police work and develop physical fitness standards and tests based on those functions. Under the ADA, employers may not refuse to hire or discharge a qualified individual with a disability because of that disability, unless that person, with or without a reasonable accommodation, is unable to perform the essential functions of the job.[3]

The CRA of 1991 prohibits employers from adjusting (or "norming") test scores for employment-related tests based on race, color, sex, religion, or national origin.[4] This provision may render illegal many currently used physical fitness programs and tests with different standards or passing scores for men and women.[5]

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Neither of these statutes requires law enforcement agencies to hire or retain persons who are physically unable to perform the job. They do, however, raise many difficult questions regarding the legal defensibility of physical fitness tests for law enforcement employment.

Accordingly, in March 1993, the FBI Academy hosted a working conference of personnel specialists, physical testing experts, and attorneys for the purpose of recommending legally defensible and operationally effective physical standards for law enforcement. A comprehensive report sets forth the findings and conclusions of this conference.[6]

The report concludes that Federal statutory requirements can be met by establishing physical standards that are job-related and consistent with business necessity and that the following simulative, content-based task test is a legally defensible fitness standard for law enforcement:

1) The person taking the test must complete a 1/4-mile course consisting of a series of 20- to 40-yard runs/sprints interspersed with the events described below.

2) The course includes a 5- to 6-foot wall climb, a 4-foot horizontal jump (may be done while running), a stair climb (six steps up, six steps down), the drag of a 160- to 170-pound dummy for 50 feet, and another run/sprint in a different direction. No specific order or frequency of events was established, but all events should appear at least once.

The report also suggests that an additional 1.5-mile run may be legally defensible as a measure of extended endurance in departments that can demonstrate that such extended endurance is a needed physical ability for successful performance of an essential function.

The report recommends that the passing time for completing the test be determined by each agency, based on the levels of performance required of its employees. The passing times should not be adjusted for age or gender.

Because all physical abilities needed to perform law enforcement duties are not tested in this recommended task test, departments may choose to test such areas as vision, hearing, manual dexterity, flexibility, reflexes, and weight/body composition separately. However, under the ADA, tests that involve medical questions or inquiries about disabilities may be given only after an offer of employment is extended.

The report concludes that the recommended task test is legally defensible as applied to both applicants and incumbent employees and encourages its use in that fashion. Yet, it counsels caution in applying the standards to incumbents unable to meet the passing standard in the

absence of a medically sound period of time in which incumbent employees may regain the needed level of fitness.

Educational Requirements

Under Title VII of the Civil Rights Act of 1964,[7] courts have afforded law enforcement organizations considerable latitude to adopt reasonable educational hiring standards that do not *unnecessarily* disadvantage groups of applicants based on their race, color, national origin, religion, or sex.[8] As a general rule, selection standards with a legally significant disparate impact must be justified by a showing of "business necessity."[9] Unlike written tests that are developed and administered by the employer, educational requirements that are largely in the control of the applicant have been upheld, even though there was no empirical validation study to prove their "business necessity" for law enforcement employment.

For example, in *Davis v. City of Dallas*,[10] the U.S. Court of Appeals for the Fifth Circuit upheld as job-related a hiring standard for police officers of 45 semester hours of college credit with at least a C average at an accredited college or university, even though the requirement had a disparate impact on minorities. The court noted that educational requirements for police officers have been consistently sustained by the courts because law enforcement is a profession with a high degree of risk and public responsibility.

The court also added that under Title VII, employers bear a corresponding lighter burden to show that employment criteria are job-related where the job requires a high degree of skill and the economic and human risks involved in hiring an unqualified applicant are great.[11] Thus, the *Davis* court concluded that empirical evidence is not required to validate the job-relatedness of the educational requirement.[12]

The U.S. Court of Appeals for the Seventh Circuit in *Aguilera v. Cook County Police and Corrections Merit Board*[13] used a similar rationale in concluding that educational standards for police officers must only meet the test of "reasonableness."[14] The court stated that EEOC guidelines for validating selection procedures do not have the force of law and that their exacting criteria are more applicable to tests made and scored by employers than to educational degrees that are awarded by schools that are independent of the employer.[15]

Psychological Testing of Applicants

Psychological testing for law enforcement positions is not legally required as a matter of Federal law.[16] However, this type of testing is generally a lawful option for police administrators if the psychological evaluation is job-related and the results are not disclosed in a manner that violates legitimate privacy interests.

Three recent Federal court decisions have ruled on the legality of psychological testing for law enforcement positions. In *Koch v. Stanard*,[17] the U.S. Court of Appeals for the Seventh Circuit ruled that applicants for the Chicago Police Department, who were denied positions because they failed a psychological test, were not constitutionally entitled to an opportunity to contest the judgment that they would not make good officers.

In another case, *Daley v. Koch*,[18] The U.S. Court of Appeals for the Second Circuit ruled that a police officer candidate, who was rejected because a psychologist found that he had shown "poor judgment, irresponsible behavior and poor impulse control," did not have a mental condition that Congress intended to be considered as a handicap under Federal law. The court noted that being perceived as unsuitable for the particular position of police officer because of those traits does not render one handicapped under Federal law.[19]

In a third case, *Klotsche v. City of New York*,[20] a Federal district court sustained the rejection of an applicant for appointment as a patrol officer because his psychological tests and interviews indicated "the presence of personality traits incompatible with the demands and stresses of law enforcement employment."[21]

Notwithstanding these cases, the decision of whether and how to use psychological testing should be based on the correlation of such tests to job performance. For example, the Supreme Court of New Jersey in the case of *Matter of Vey*[22] cautioned that while the use of psychological tests to predict or evaluate employee job performance is a recognized part of the American workplace, such tests " ... are only as good as their correlation to actual job performance."[23] In this case, a candidate for appointment as a police officer was found to be mentally unfit to perform police duties based on a psychological test, which identified a variety of seemingly unremarkable personality traits and then concluded that they demonstrated a below-average potential.

The court, relying on State civil service law, ruled that the law enforcement agency had the burden of establishing the job validity of its psychological tests by producing " ... evidence of a correlation between such nonpathological test results and actual job performance."[24] The *Matter of Vey* case illustrates the importance of ensuring that a psychological test is validated as an accurate predictor of performance as a police officer ***before*** it is used as a basis for deciding that a particular applicant is psychologically unfit.

Preemployment Polygraph Examinations

Polygraph examinations as a component of the hiring process must be reasonably conducted to be constitutional, but may also be subject to more restrictive State laws. For example, in *Woodland v. City of Houston*,[25] the U.S. Court of Appeals for the Fifth Circuit ruled that the constitutionality of preemployment polygraph testing depends on a balancing of the police department's interest in preemployment testing against the applicant's privacy interest. The

court also noted that factual questions relevant to this balancing test include the intrusiveness of the particular questions asked during the polygraph test and whether there were any abuses of privacy.

In *Anderson v. City of Philadelphia*,[26] The U.S. Court of Appeals for the Third Circuit upheld the constitutionality of preemployment polygraph testing by concluding that it is not "... irrational to believe that the polygraph has utility in connection with the selection of law enforcement officers."[27] Conceding that the use of polygraph testing is a debatable issue, the court nonetheless concluded " ... that in the absence of a scientific consensus, reasonable law enforcement administrators may choose to include a polygraph requirement in their hiring process without offending the equal protection clause."[28]

The court found polygraph testing to be rationally related to the legitimate purpose of selecting better officers because:

> The main flaw of polygraph testing in the employment screening context, overexclusiveness through generation of false positive results, is not a problem of constitutional significance where, as here, the test of constitutionality is whether the relative quality of the final group selected might possibly be higher than that of the group selected if the polygraph were not used.[29]

The court also found it rational to believe the polygraph produced fuller, more candid disclosures by applicants on the department's "Personal Data Questionnaire" which, in turn, provided useful background information for selecting qualified law enforcement officers.

Finally, the court rejected the claim that the applicants who failed the polygraph were "branded as liars" in violation of due process. The court noted that even if the polygraph results were viewed as stigmatizing, the fact the department kept the polygraph results confidential and undisclosed meant that an applicant's liberty interest was not implicated.[30]

In *O'Hartigan v. State Department of Personnel*,[31] the Supreme Court of Washington ruled that the State patrol constitutionally refused to consider an applicant for a word processor position who had refused to submit to a polygraph examination required of all applicants. The court noted that if hired, she would have been privy to highly confidential and extremely sensitive matters, such as investigative reports and employee disciplinary records, and that the State has a legitimate interest in providing its citizens with law enforcement agencies free of corruption and secure in their employees' access to sensitive information.

The court found the scope of disclosure required by the questions asked during the polygraph examination was no greater than needed to meet the goal of hiring employees with integrity. At the same time, the court cautioned that limits and guidelines to avoid "standardless,

boundless inquiries" need to be set in order for the actual administration of a polygraph test to be constitutional.[32]

Finally, the court rejected the claim that testing only law enforcement applicants and not applicants for other government jobs constitutes a violation of equal protection. The court found "... a valid reason for treating law enforcement job applicants differently due to the sensitive information accessible to employees (even nonofficers), and the unique potential dangers inherent to compromised intelligence during ongoing criminal investigations and other law enforcement activities."[33]

Criminal History Assessments

Employers are generally afforded considerable latitude under Federal law to consider criminal history and past criminal conduct to determine an applicant's fitness for law enforcement employment. In that regard, the U.S. Supreme Court in *New York Transit Authority v. Beazer*[34] upheld a general policy against employing persons receiving methadone maintenance treatment for curing heroin addiction.

The Court ruled that even if the policy had a disparate impact on minorities that established a prima facie case of discrimination under Title VII of the Civil Rights Act of 1964, the rule is "job-related" to the legitimate employment goals of safety and efficiency for "safety sensitive" positions.[35] The Court also rejected an equal protection objection to the policy, finding the policy rationally related to the general objectives of safety and efficiency.[36]

State law may limit the extent to which criminal history can be used as a basis to deny employment for a law enforcement position. For example, in *Tharpe v. City of Newark Police Department*, [37] a New Jersey appellate court interpreted State law as generally permitting the disqualification of an applicant from law enforcement employment based on an arrest 7 years earlier for possession of a small amount of marijuana, even though that arrest was unsupported by conviction and resulted in a conditional discharge.

However, the court cautioned that the circumstances surrounding any such arrest should be considered because " ... the fact of an arrest, standing alone, may have no persuasive force in assessing an applicant's qualifications."[38] Because such arrests might be based on a misidentification or constitute a trivial and isolated event in an otherwise unblemished life, the appropriate inquiry should be whether the circumstances surrounding the arrest "adversely relate" the law enforcement employment. The court said, " ... consideration should be given to the nature and seriousness of the offense charged, the surrounding circumstances, the date of the offense and the individual's age at the time, whether the offense alleged was an isolated incident, and any evidence of rehabilitation."[39]

In *Sandlin v. Criminal Justice Standards & Training Commission,*[40] the Supreme Court of Florida ruled that a pardoned felon, who sought certification as a law enforcement officer, was entitled under State law to consideration to determine if he possessed sufficient good character required of law enforcement officers. While the commission has broad discretion under State law to certify a pardoned felon for a law enforcement position, it may also refuse to do so if it deems the pardoned felon to be of bad character, a poor moral risk, or an otherwise unfit appointee. In that regard, the court concluded the commission may take into account the facts of any pardoned convictions and also give weight to State legislation that establishes a general policy against certifying convicted felons or persons with a criminal history incompatible with law enforcement employment.[41]

In *Adams v. County of Sacramento,*[42] a California appellate court upheld a State law provision that barred anyone convicted of a felony from employment as a peace officer, despite the expungement and setting aside of that prior conviction. The court interpreted the State preclusion from law enforcement employment as not the kind of penalty or disability that is eliminated by expungement. The court also noted that the provision against employment of convicted felons as peace officers was designed " ... to assure, insofar as possible, the good character and integrity of peace officers and to avoid any appearance to members of the public that persons holding public positions having the status of peace officers may be untrustworthy."[43]

Conclusion

The court decisions surveyed in this article support the general proposition that State and Federal laws afford law enforcement administrators considerable latitude to implement reasonable job-related hiring standards to ensure law enforcement officers possess the physical, educational, emotional, and integrity qualifications to perform the essential functions of law enforcement. However, because of the potential for more restrictive State laws, it is recommended that a legal advisor review the legal defensibility of all hiring standards *before* they are implemented.

Notes:

1. 42 U.S.C., sec. 12101 (1990).

2. 42 U.S.C. sec. 2000e, *et. seq.* (1991).

3. 42 U.S.c., sec. 12101, *et. seq.*

4. 42 U.S.C., sec. 2000e - 2(1)(1991).

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5. For a discussion of how "normed" standards might still be defended in height/weight assessments, affirmative action programs, and voluntary physical fitness programs, *see* John Sauls, "The Civil Rights Act of 1991--New Challenges for Employers," *FBI Law Enforcement Bulletin*, September 1992.

6. A copy of this report can be obtained by mailing a written request to the FBI Academy, Legal Instruction Unit, Quantico, Virginia 22135, Attention: Fitness Report.

7. 42 U.S.C., sec. 2000e, *et. seq.* (1991).

8. *See, e.g., Castro v. Beecher*, 459 F.2d 725 (1st Cir. 1972); *Morrow v. Dillard*, 412 F.Supp. 494 (D.C. Miss. 1976); and *United States v. Buffalo*, 457 F.Supp. 612 (W.D.N.Y. 1978).

9. *See Wards Cove Packing Co. v. Antonio*, 100 S.Ct. 2777 (1988).

10. 777 F.2d 205 (5th Cir. 1985), *cert. denied*, 106 S.Ct. 1972.

11. *Id.* at 213.

12. *Id.* at 215. The court endorsed the lighter burden of proof set forth in *Spurlock v. United Airlines, Inc.*, 475 F.2d 216 (10th Cir. 1972).

13. 760 F.2d 844 (7th Cir. 1985), *cert. denied*, 106 S.Ct. 237.

14. *Id.* at 847.

15. *Id.*

16. It may be necessary to delay the psychological or polygraph testing of applicants for law enforcement positions until at least a conditional offer of employment is made. This is because the ADA prohibits medical examinations or inquiries about the existence, nature, or severity of a disability, unless an offer of employment, which may be conditional upon the results of the medical examination, has been extended. 42 U.S.C., sec. 12112(c).

17. 962 F.2d 605 (7th Cir. 1992).

18. 892 F.2d 212 (2nd Cir. 1989).

19. *Id.* at 215.

20. 621 F.Supp. 1113 (S.D.N.Y. 1985).

21. *Id.* at 1116.

22. 591 A.2d 1333 (Sup.Ct. N.J. 1991).

23. *Id.* at 1336.

24. *Id.* at 1338.

25. 940 F.2d 134 (5th Cir. 1991).

26. 845 F.2d 1216 (3d Cir. 1988).

27. *Id.* at 1223.

28. *Id.* at 1225.

29. *Id.* at 1223.

30. *Id.* at 1222.

31. 821 P.2d 44 (Sup.Ct. Wash. 1991).

32. *Id.* at 49.

33. *Id.* at 50.

34. 440 U.S. 568 (1979).

35. *Id.* at 587, n.31.

36. *Id.* at 592.

37. 619 A.2d 228 (N.J. 1992).

38. *Id.* at 230.

39. *Id.* at 231. *See also, Delehant v. Board on Police Standards*, 839 P.2d 737 (Ore.App. 1992), holding it permissible to consider criminal record that was not expungeable under State law in determining fitness for law enforcement employment.

40. 531 So.2d 1344 (Sup.Ct. Fla. 1988).

41. *Id.* at 1347.

42. 235 Cal.App.3d 872 (Calif. 1991).

43. *Id.* at 881.