Validation of Potential Response Elements in the Directed-Lie Control Question

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Abstract

A recently published analysis of the psychodynamics of the directed-lie control question (DLCQ) included a table which listed nine possible Potential Response Elements which could be activated by either the innocent or the guilty examinee or both when presented with a directed-lie control question in a Control Question Test. It was theorized that five of these elements had the potential of eliciting a response from a guilty examinee presented with a directed-lie control question during a Control Question Test.

The present study was designed to determine the validity of this hypothesis by simulating a psychophysiological veracity (PV) examination in which 117 guilty participants were queried about the focus and strength of their psychological set in each one of the nine potential response elements to either the DLCQ or its neighboring relevant question. This study further evaluated the psychological effect of discussing the DLCQ with the guilty examinee between the conduct of the tests (charts) or repetitions. The results of this study validated the focus of the guilty examinee's psychological set and Potential Response to the nine Elements, five of which elicited an affirmative response from the guilty examinee that are capable of producing a false negative test result. This study also confirms that the discussion of the DLCQ between charts (tests) increases the guilty examinee's apprehension regarding the DLCQ, thus reorienting the guilty examinee's psychological set from the relevant questions(s) to the directed-lie control question(s), creating a formula for false negative results.

Background

The directed-lie control question (DLCQ) has recently been introduced as a substitute for the traditional probable-lie control question (PLCQ) in control question tests. Proponents of the DLCQ have offered one field study (Honts & Raskin, 1988) and one analog study (Horowitz, Kircher, Honts & Raskin, 1997) in support of its validity, but both studies have been criticized (Abrams, 1991; Barland, 1998; Matte, 1998) as lacking sufficient data to support the validity of the DLCQ. Other studies (Barland, 1981; Abrams, 1991[1]) have demonstrated that the DLCQ identified the truthful significantly better than chance but failed to identify the deceptive subjects on the relevant questions

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[1] A criticism of Abrams' study is that he introduced the DLCQ in the last chart of the PV examination, thus reorienting the guilty examinee's psychological set toward that question. However, inasmuch as it is within the methodology of the DLCQ to routinely have a stimulating discussion of the DLCQ between each test (chart), the point of Abrams' introduction of the DLCQ in the third chart is moot.

much better than chance in the Barland study, and a total failure in the Abrams study.

Barland (1998) criticizes the Honts & Raskin (1988) study on several points, which are quoted almost verbatim below:

> The study fails to show the total number of examinations conducted from which the verified cases were acquired, nor the proportion of DI/NDI/Inc in total examination population. The study also fails to provide the base rate for guilt. Furthermore, the study over-estimates the accuracy by systematically excluding most false negatives and some false positive errors. The study fails to report important details necessary for evaluating the quality of the study, thus can't be replicated. In addition, subjects were not randomly assigned (not an experiment) nor drawn at random, thus there is possible bias. Also there is potential bias with all three ground truth criteria, especially retractions and confessions. Two of the three criteria are not independent of the polygraph. The incontrovertible physical evidence exonerated the innocent but was not used to verify the guilty. There are too few subjects (13 criterion innocent, 12 criterion guilty, totaling 25 subjects) to generalize to the parent population, much less to generalize to all investigative examinations in America. The re-scorers knew which were Directed-Lie Controls, thus there is potential bias. The study fails to mention that the DLCQ caused the one false negative error, and the study does not report analyses showing that the group differences were not significant, as that would undercut their argument for the superiority of the Directed-Lie Control. The study assumes that what they do is done by everyone else. "According to common field practice, the CQs and the DLCQ were reviewed with the S between each chart in order to maintain their signal value throughout the examination." The conclusions go beyond the data in that there is no evidence that the directed-lie control was superior to the probable-lie control. (Barland, 1998).

Dr. Abrams (1991) expressed his concern about the criteria used to establish ground truth in 11 of the 25 subjects used in the Honts & Raskin (1988) study, inasmuch as those eleven subjects were suspects in child sexual abuse cases and one of the criteria used for verification was the retraction of an allegation. Dr. Abrams, a clinical psychologist and forensic psychophysiologist stated that "[i]t is not at all unusual for a child victim of sexual abuse to retract his or her accusation, but that does not necessarily mean that the abuse did not occur." Abrams quoted Toth & Whalen (1987) "Whatever a child says about sexual abuse, she is likely to reverse it. Beneath the anger of impulsive disclosure remains the ambivalence of guilt and the martyred obligation to preserve the family. In this chaotic aftermath of disclosure, the child discovers that the bedrock fears and threats underlying the secrecy are true. Her father abandons her and calls her a liar. Her mother does not believe her and decompensates into hysteria or rage" (Abrams 1991).

Dr. Abrams in his response (in press) to Honts' 1999 study regarding "The Discussion (Stimulation) of Comparison Questions" documents 18 court cases where the results of polygraph tests employing the DLCQ with its methodology of discussion (stimulation) of comparison questions, were confirmed as false negatives (confirmed deceptive examinees erroneously classified as truthful regarding the target issue) through confessions, convictions[2], or guilty pleas. For a list of more details and additional cases, Abrams invites the reader to consult the testimony in U. S. v. Clayton and Dalley or Steve Griffith v. Muscle Improvement, Inc. Abrams stated that "[o]ne should also recognize that the worst part of this is how many other cases exist in which the experts

[2] A study by C. Ronald Huff, Arye Rattner and Edward Sagarin (1986) estimated that the rate of wrongful convictions (irrespective of polygraph evidence) in the United States is one-half percent (0.5%).

have convinced a jury that the defendant was innocent and this was not in fact the case" (Abrams, in press).

In 1981, Dr. Gordon H. Barland reported his results of a Validity and Reliability Study of Counterintelligence Screening Tests, wherein he used 56 U.S. Army employees in a mock screening situation to determine the accuracy of PV examinations with the Counterintelligence Screening Test (CIST) using directed-lie questions. This CIST is derived from the federal version of the Zone Comparison Test. Five different models of field polygraph instruments were used which recorded respiration, skin resistance and relative blood pressure. The test contained 13 questions: five relevant, four directed lies, two symptomatic, one sacrifice-relevant and one irrelevant. Following the tests, the examiners evaluated each set of charts using three different methods: the zone method, the greatest control method and the relevant-irrelevant method. A comparison of the effectiveness of the three evaluation methods for the truthful questions revealed that "the relevant-irrelevant method had the fewest inconclusives, whereas the greatest control method had significantly fewer errors than either the zone method (chi square = 5.699, df = 1, $p<.02$) or the relevant method (chi square = 5.566, df = 1, $p<.02$). The only method of evaluation which was able to successfully identify the deceptive questions was the relevant-irrelevant method (binomial test, $p = .031$)." Table 5 of Barland's study regarding the zone method revealed that "Including inconclusives, 77% of the truthful questions and 57% of the deceptive questions were correctly identified. Exclusion of the inconclusive results yielded accuracy rates of 91% for the truthful questions and 63% for the deceptive questions. The zone method was unable to identify the programmed deceptive questions any better than chance ($z = 1.155$; $p = .125$)." Table 6 of Barland's study regarding the greatest control method reflects that "Including the inconclusive questions, 85% of the truthful questions and 43% of the deceptive questions were correctly identified. Exclusion of the inconclusive questions resulted in accuracy rates of 97% for the truthful questions and 54% for the deceptive questions. The greatest control method was totally unable to identify the programmed deceptive questions any better than chance." Table 7 of Barland's study regarding the Relevant-Irrelevant Method revealed that "Including the inconclusive questions, 88% of the truthful questions and 67% of the deceptive questions were correctly identified. Exclusion of the inconclusive questions resulted in accuracy rates of 92% for the truthful questions and 69% for the deceptive questions. The relevant-irrelevant method of evaluation was able to identify both the truthful and deceptive questions at levels beyond chance expectations (for the deceptive questions, $z = 1.86$, $p = .031$)." Barland's study demonstrated that the CIST which incorporated the directed-lie control question (excluding inconclusives) identified the truthful significantly better than chance but failed to identify the deceptive subjects on the relevant questions any better than chance (63%) with the zone method; was totally unable to identify the deceptive questions any better than chance (54%) with the greatest control method; and identified the deceptive questions beyond chance expectations (69%) with the relevant-irrelevant method. (Barland 1981).

A critique of an analog study conducted by Horowitz, et al (1997) by the first author (Matte, 1998) regarding "The Role of Comparison questions in Physiological Detection of Deception" reports that Horowitz himself noted that the "respiration responses by Innocent participants to DL questions (both PDL and TDL) were opposite to that predicted by prior research, whereas respiration responses by PL participants were as strongly in the predicted direction." Horowitz stated that "respiration may be the least reliable physiological measure when scored numerically, and respiration length had the largest drop in validity when the computer scoring model was cross-validated," citing Kircher & Raskin, 1988. Horowitz et al suggested that "When DL questions are used, perhaps respiration responses should not be used or should be weighted the least of the physiological measures." However, it should be noted that in many field studies, respiration recorded by the pneumograph was shown to have equal diagnostic value and in

some field studies respiration had greater diagnostic value than its neighboring parameters (Buckley & Senese, 1991; Elaad, 1985; Elaad & Kleiner, 1990; Matte & Reuss, 1992; Nakayama & Yamamura, 1990 Slowick & Buckley, 1975). An experimental scoring technique proposed and tested by Jayne (1990) also supported the pneumograph as providing the most diagnostic information. The electrodermal (GSR) is sometimes the least effective parameter (Jayne, 1990; Matte & Reuss, 1992). Furthermore, a study by Elaad, Bonwitt, Eisenberg, Meytes in 1982 revealed that respiration was the only one of the three parameters (pneumograph, electrodermal, cardiograph) not affected by beta blockers.[3] Interestingly, Elaad, et al concluded that "respiration seemed to improve the overall detection rate especially because skin resistance responses have the quality of rapid habituation." Thus respiration appears less vulnerable to habituation.[4]

Honts & Gordon (1999) explain that the failure of the DLCQ in the respiration parameter to identify the innocent was due to its evaluation with the computer algorithm, and that Matte "confuses the issue by mixing the results of computer-derived features with those that are the result of numerical scoring." However, Horowitz et al (1997) in reporting the dismal performance of the DLCQ with respiration, offer no numerical scoring data that contradicts the algorithm data and states "respiration may be the least reliable physiological measure when scored numerically, and respiration length had the largest drop in validity when the computer scoring model was cross-validated." If the computer algorithm is responsible for the poor performance of the DLCQ in identifying the innocent, then why does Horowitz make the general recommendation that "When DL questions are used, perhaps respiration responses should not be used or should be weighed the least of the physiological measures." L. S. Fuse (1982) warned of the vulnerability of the DLCQ to false positives/ negatives depending upon the amount of emphasis by the examiner on the DLCQ. The fact that in this instance the DLCQ produced false positive results in the respiration parameter is another indication of its unreliability.

In a recent analog study by the Department of Defense Polygraph Institute Research Division Staff (1998), the results reflect that of the 30 guilty programmed examinees tested in a Test for Espionage and Sabotage (TES) using the directed-lie control question, 25 were correctly identified and 5 were false negatives (16.67%). It should be noted that a report by Norman Ansley, Department of Defense on "The Validity and Reliability of Polygraph Decisions in Real Cases" during the period 1980-1990 revealed that of the 7 studies involving 7 different polygraph techniques (Backster Tri-Zone, Matte Quadri-Track ZCT, Reid CQT, Arther CQT, Utah CQT, Canadian CQT, MGQT), the combined false positive rate (innocent found guilty) was 5% and the combined false negative rate (guilty found innocent was 1%. (Ansley 1990). The above analog study of the TES using the DLCQ reflects an increased false negative rate of 15.67%. It should be noted that between test stimulation as reported in studies by Honts and Raskin (1988) and Horowitz, Kircher, Honts, Raskin (1997) was eliminated in the aforesaid TES study (Dollins 1999). It should further be noted that there is more incentive for the guilty examinee in a real-life case to use countermeasures on the directed-lie control question, which the guilty examinee perceives as the physiological means to identify his/her lie to the relevant questions on the same PV test, thus an even greater increase in the percentage of false negatives can be expected when using the DLCQ. The directed-lie has been researched in the context of other formats such as the Positive Control Technique (Addison 1982; Driscoll, Honts, Jones, 1987; Forman, McCauley 1987) which

[3] It should be noted that the neurological pathway for respiratory control is different than the other two parameters (cardiovascular and electrodermal) which may explain differing parameter results. See Chapter 4, Forensic Psychophysiology Using The Polygraph. J. A. Matte (1996).

[4] The conclusion by Horowitz, et al (1997) that the respiration responses were opposite to that predicted suggest a need for a paradigm shift that the DLCQ is wrong.

indicated that the directed-lie produced an unacceptable percentage (22-45) of false negatives and inconclusives. As indicated in a previous study (Matte, 1998), it is not the dissimilarities in the techniques (Honts & Gordon, 1999) that are important, but those similarities in the PCT which include the five elements in Table 1 that may elicit a response from the guilty examinee creating a potential false negative result.

The DLCQ also suffers a number of face validity problems (Matte, 1996). The DLCQ is presented to the examinee as a means of acquiring the examinee's physiological fingerprint of his/her lie pattern for comparison with the relevant (crime) test questions. As explained in detail in a previous study (Matte, 1998), this renders the DLCQ as a Deception Exemplar question which the guilty examinee is likely to consider an equal or greater threat[5] to his/her security than the neighboring relevant question. Furthermore, the innocent examinee is merely directed to lie to a probable-lie control question hence the name directed-lie control question. Therefore the innocent examinee is not attempting deception to a control question and thus has no reason to fear it. DLCQ proponents apparently recognized the DLCQ's lack of stimulating quality to the innocent examinee, inasmuch as the DLCQ procedure requires that "[t]he examiner emphasized the DL questions by indicating that it is important to determine if the person's reactions to the R questions are the same or different from their reactions when they lie to the DL questions." Furthermore, "to increase the salience of their lies to the PDL questions, participants were instructed to think of a specific instance when they had actually committed the act embodied in the question (e.g., broken a rule or regulation), not to tell the examiner what it was, and to think of it when they answered 'no' to the question during the test." (Horowitz et al, 1997).

Directing the examinee to think of an incident embodied in the DLC question when answering "no" to the question during the actual test has the effect of disorienting the selective attention process, in that the guilty examinee, whose attention should be focussed squarely onto the relevant question, is now being asked to divert attention to the DLCQ during the test. In addition, to further increase the strength of the DLCQ, the examinee is questioned between each chart (test) regarding the DLCQ. "Participants in the DL conditions were asked if the DL questions were clear and if they were aware that they were lying when they answered them."[6] (Horowitz et al, 1997). That is a manipulation of the examinee's psychological set, which should be self-directed onto either the control questions if innocent or the relevant questions if guilty. In the use of the traditional Probable-Lie Control Question (PLCQ), the examinee is not directed or instructed as to what to think about during the actual test. The examinee's psychological set is self-directed onto the relevant question if deceptive to the target issue, or onto the PLCQ's if truthful regarding the relevant question. The PLCQ is designed to be structurally less intense than the relevant questions with the use of time bars, etc., so that the relevant questions will be more threatening to the guilty examinee. The purpose of both the PLCQ and the DLCQ is to elicit an autonomic response from the innocent but not the guilty. Both the PLCQ and the DLCQ are used in a Zone Comparison Technique which was conceived and developed by Cleve Backster, who developed rules based on logic, experience, and empirical data which have withstood the test of time (40 years) and the system upon which those rules are based has been validated in several research studies. (Raskin, Barland, Podlesny 1978; Widacki 1982; Putnam 1983; Elaad & Schahar 1985; Patrick & Iacono 1987; Matte & Reuss 1989; Arellano 1990).

[5] Proponents of the DLCQ (Honts & Raskin 1988; Horowitz, et al 1997) employ non-exclusive control questions in the formulation of their directed-lie control questions. Use of the non-exclusive control question presents an additional problem in that it includes the period of the alleged offense. For argument against its use, see Pages 290-291, Chapter 9, Forensic Psychophysiology Using The Polygraph: Scientific Truth Verification – Lie Detection.

[6] The argument can be raised that for the same reason we are not permitted to discuss solely the relevant questions between charts (tests) for fear of causing a false positive, we should not be permitted to discuss solely the control questions for fear of causing a false negative result. If the former can cause a shift in the examinee's psychological set, so can the latter.

The routine practice of discussing the DLCQ between charts by its proponents[7] is a clear violation of the Zone Comparison Technique rules established by its originator Cleve Backster, which are articulated in his Tri-Zone Reaction Combinations Table in effect since 1962. The Backster Tri-Zone Reaction Combinations form the nucleus of the Backster Zone Comparison Technique (Backster 1999). The Backster rules support the arguments presented in this study against the unwarranted manipulation of the examinee's psychological set, regardless whether the PLCQ or the DLCQ is used, because it violates the basic premise of the Zone Comparison Technique which is to determine which of the two zones (Green for Truthful – Red for Deceptive) offers the greatest threat to the security of the examinee, without the introduction of any element that might alter the examinee's psychological set which must be self-directed to be a valid representation of the strength and origin of the threat. That rule states that:

> "After formulation and discussion of control (contrast) questions during the pre-test interview, further routine discussion of these questions will be avoided except as dictated by principles outlined in our Zone Comparison Indication-Remedy table.
>
> 1. Should the examinee be reacting to relevant questions only (Combination A), there is no need for further stimulation on the control (contrast) questions through between-charts discussion. The adequacy of these questions can be verified by obtaining additional admissions following the last chart collected on that same target issue and prior to seeking target issue admissions due to the examinee's reactions to the relevant questions.
>
> 2. Should the examinee be reacting to the control (contrast) questions only (Combination B) there is no need for further 'between charts' discussion of these questions.
>
> 3. Should the examinee be reacting to both the relevant questions and the control (contrast) questions (Combination D), further direct discussion of these questions could be counter-productive. In a more subtle fashion the examiner should reduce the intensity of these questions through a more indirect approach.
>
> 4. Should the examinee show no reaction to any of the questions (Combination H) it would then be proper to attempt to stimulate reaction to the control (contrast) questions by directly discussing these questions between charts. (Backster 1998a)

Note: In item 3 above, the subtle approach used is to first discuss with the examinee a cosmetic change to the irrelevant (neutral) question or even the symptomatic question(s). Then the relevant questions are reviewed followed by the changed control question(s). In that manner, the control questions are not singled out. (Backster 1998b)

It should be understood that the concept of the Control Question Technique is for the examinee to be psychologically primed during the pretest interview to choose for himself/herself which type of test questions are most threatening to him/her, the control (comparison) questions or the neighboring

[7] Honts & Gordon (1999) state that "both relevant and DLC questions were reviewed between each chart (as was standard practice at the University of Utah for probable-lie control question tests; see Honts, 1998)." However both studies by Honts & Raskin (1988) and Horowitz, Kircher, Honts & Raskin (1997) reflect that only the control questions (CQs and DLCQ) were reviewed between each chart or repetition. There is no mention in either of aforesaid studies of any review of the relevant questions between each chart or repetition. However, in State of Montana v. Gordon, Jefferson County Court, Case No. D.C. 97-1541, Honts discussed all four relevants in a single sentence, while each of the three DLCQs was discussed individually (Abrams 1999), hence placing greater emphasis on the DLCQs than the relevants thus redirecting the guilty examinee's psychological set onto the DLCQs. This manipulation of the examinee's selective attention process also has the effect of increasing mental exercise related to the DLCQs for both the guilty and the innocent, which has been shown to effect a corresponding autonomic response. (C. D. Lee 1953; Boiten 1993; S. Bongard, J. S. Pfeiffer, M. Al'Absi, V. Hodapp, and G. Linnenkemper, 1997).

relevant questions, and this is subsequently determined by the physiological responses recorded on the polygraph charts during the administration of the psychophysiological veracity (PV) test(s). Therefore, any discussion of the test questions between the conduct of the polygraph charts (tests), only serves to upset the delicate balance between the control and relevant questions upon which the examinee's psychological set is self-focused. The only exception to this rule is when remedial action is necessary to correct an ineffective or malfunctioning control question as articulated in Backster's rules above.

The need for the DLCQ to be continually re-emphasized during the conduct of the examination due to its weakness as a control question, may serve to strengthen it in order to avoid false positive results, but in the process, it can also cause false negative results, inasmuch as the guilty examinee's psychological set, perhaps already focused onto the DLCQ due to its perception as a relevant Exemplar of Deception Question, will now be further enforced by its discussion.

The Potential Response Elements (PRE) reflected in Table 1 were taken from an all-inclusive list of potential variables whose psychological sources have been identified, classified, discussed and addressed in Chapter 9, Forensic Psychophysiology Using The Polygraph (Matte, 1996). Even if other Response Elements capable of eliciting a response from the examinee were found, it would not delete or eliminate those five Potential Response Elements identified in Table 1 which are capable of eliciting a response from the guilty examinee. Any of those five PRE's can cause a false negative.

Table 1

Comparison Of PLCQ And DLCQ Potential Response Elements

Response Elements Subjects:	**Focus of Psychological Set and Potential Response**			
	PLCQ		***DLCQ***	
	Innocent	*Guilty*	*Innocent*	*Guilty*
1. Fear of Detection	**Yes**	**No**	**No**	**No**
2. Fear of Error	**No**	**No**	**Yes**	**No**
3. Hope of Error	**No**	**No**	**No**	**Yes**
4. Fear of Physiological Comparison	**No**	**No**	**No**	**Yes**
5. Perceived as Threat to Outcome of Test	**No**	**No**	**Yes**	**Yes**
6. Perceived Threat of Past Offense Reflecting on Capacity to Commit Current Offense	**Yes**	**No**	**No**	**No**
7. Shame-Embarrassment	**Yes**	**No**	**No**	**No**
8. Perceived Relationship with Relevant Question	**No**	**No**	**Yes**	**Yes**
9. Invitation to Countermeasures	**No**	**No**	**No**	**Yes**
Total Affirmatives	**3**	**0**	**3**	**5**
Potential Errors		**False Negative**		**False Negative**

The nine Potential Response Elements listed on the previous page which were taken from Table 1 Comparison of PLCQ and DLCQ Potential Response Elements (Matte, 1998) which is included herewith also as Table 1, reflect five instances when the DLCQ may elicit a response from a Guilty examinee resulting in a potential false negative. The following study examines those potential response elements to determine their validity by simulating a PV examination setting using 117 participants in the role of guilty examinees. Each guilty examinee is then debriefed to determine the focus and strength of their psychological set on each of the potential response elements.

There are a variety of analog (laboratory) studies. There are those traditional analog studies of polygraphy that are designed to measure the accuracy of a polygraph technique by recording the strength and direction of an examinee's autonomic responses to pre-selected relevant and control questions. Obviously the strength of the autonomic responses are expectedly less in analog studies than they would be in field studies where the real presence of fear of detection is operant. The lack of any fear of error by the innocent in analog studies which may be present in field studies is also recognized. The potential anger element is usually not present in field studies when the tests are properly conducted, inasmuch as in common practice it is recommended that no test be conducted when the emotion of anger is present and cannot be eliminated. It is in that context that this first author has in the past made note of the significant differences between analog and field studies.

However, the present study differs from traditional analog studies in that it is not recording and measuring the participants' physiology, nor is it attempting to determine the accuracy of a PV examination technique. This study is designed to determine the thought processes and attitudes of each programmed guilty participant regarding each of the nine potential response elements identified in Table 1, and the effects of discussing the directed-lie questions between charts (tests), based on the same facts that would be presented to them in an actual PV examination.

The questionnaire in this study deliberately invites intellectual decisions which may generate emotions. Real-life case participants also have to make intellectual decisions which may generate emotions which in actual cases are then recorded and evaluated. In this study we were only interested in the thought processes and attitudes present when making those intellectual decisions. We were not interested in the emotional response that may follow on the test, but only in the intellectual decision that preceded it, and there is no reason to believe that they would be any different in either circumstance. We doubt that Question 8, for instance, would elicit a different response from a guilty participant in a real-life case, to wit: "As a Guilty examinee, if you knew how to use a physical or mental countermeasure, would you have employed one when asked the Directed-Lie Questions 3 and 4 during the test? Yes? or No?"

The pretest interview including the review of the control and relevant test questions was included in the preparation of each participant. Furthermore, the questions presented in the questionnaire pertain to events occurring during the pretest interview, prior to the conduct of the test wherein the physiological data would be collected. Thus there is no reason to believe that the participants would provide an evaluation of their thought processes and attitudes regarding the nine potential response elements and in-between chart discussion of the DLCQ, embodied in the questionnaire, that would be significantly different than their evaluation of those PRE's in a post-test interview of real cases. Furthermore, post-test interviews in real cases might produce false answers from guilty suspects, whereas in the instant analog study, the guilty participants had absolutely no motive to lie to any of the questions in the questionnaire.

The whole purpose of this study was to determine the validity of the Potential Response Elements reflected in Table 1, plus Question #9 regarding the effect of discussing the DLCQ between charts. Thus the task was

to construct questions that revealed the thought processes and attitudes dealing specifically with those elements set forth in Table 1 plus the issue in question #9. The questions had to be simple to understand, direct, and reflective of the choices available in a real-life situation. The issue of spontaneity of response is moot because none of the PREs covered in the questionnaire would elicit a spontaneous response inasmuch as the pretest interview usually lasts approximately one hour in which all of those intellectual evaluations would be made regarding each of the PREs. Question #9, not dealing with the nine PRE's, is the only question that queries the participant with the thought processes/attitudes regarding a specific event occurring between the collection of chart data. On that issue, it is interesting to note that Horowitz et al (1997) reported that "[p]articipants rated how strongly they thought they had reacted to the questions during the test . . . Innocent participants reported that their reactions to comparison questions were significantly stronger (M=3.6) than their reactions to R questions (M=4.7) $t(59)=3.96, p<.01$, and Guilty participants showed the reverse pattern (comparison M=3.9, R M=2.8), $t(59)=4.34, p<.01$. All findings were consistent with the results of analyses of physiological activity."

Inasmuch as the nine PRE's do not solicit feedback regarding their analysis of physiological activity, the issue of self-reporting being a true reflection of internal psychological processes is not relevant to this study. Nevertheless, it is interesting to note that Horowitz, in a Post-test Questionnaire, had the participants rate "the importance of each test question in determining the outcome of the test" and found that, regardless of guilt or test structure or their interaction, participants rated Relevant questions as more important than control (comparison) questions. Nevertheless, the majority of Innocents responded more to the control questions, exhibiting selective attention, in TDL, PDL and PL test groups. However, it should be noted that the innocents responded more to the comparison questions due to the DLCQ methodology's routine manipulation of their psychological set onto the comparison questions, including between-chart discussion of DLCQ's, as explained previously. Without this psychological manipulation, which DLCQ proponents find necessary to strengthen an otherwise weak comparison (control) question, the majority of innocents' autonomic responses would be on the relevant questions consistent with their initial perception of the threat offered by the two zones. Thus the above could be construed as further evidence of the corruptive power of the DLCQ's methodology on the psychological set of the examinee.

Method

Participants

Eight groups of participants, consisting of 69 males and 48 females, totaling 117 were recruited from the states of New York, California and Indiana. The participants were adult college students, business people, a social group, industry personnel, and students at a technical school. The demographics of each group are reflected in Table 2.

Procedure

Each participant was to take on the role of a person who had committed a larceny of $15,000.00 from the office safe at his/her workplace, and the participant was the prime suspect inasmuch as the other two employees having the combination to the safe had passed a Psychophysiological Veracity (PV) examination. The participant/suspect was offered a deal by the district attorney that if the participant agreed to submit to a polygraph examination and was found to be truthful regarding the target issue, the pending charges would be dropped. However, if the test results indicated deception or he/she refused to be tested, then the participant/suspect would be formally charged. Hence each participant (guilty of the crime of larceny) agreed to submit to a PV examination.

An explanation of the pretest interview and collection of the physiological data with the polygraph instrument was explained to each group of participants. The polygraph test questions were then reviewed with each

Table 2

Demographics

Validation of Potential Response Elements in DLCQ

	Number of Participants	Gender		Age Range	Race					Education Range	Previous Polygraph
		M	*F*		*W*	*B*	*H*	*A*	*I*		
Group 1	16	10	6	18-36	15	1	0	0	0	13-14	0
Group 2	17	10	7	17-26	17	0	0	0	0	13-14	0
Group 3	17	6	11	17-35	17	0	0	0	0	13-14	0
Group 4	11	7	4	27-41	10	1	0	0	0	12-19	0
Group 5	14	6	8	42-70	14	0	0	0	0	12-17	0
Group 6	10	7	3	19-59	8	0	0	2	2	12-15	3*
Group 7	12	5	7	18-56	10	2	0	0	0	13-14	0
Group 8	20	18	2	27-63	16	1	3	0	0	12-16	10*1**
Totals	117	69	48	17-70	107	5	3	2	2	12-19	13*1**

* Denotes that these participants were previously administered a Pre-Employment polygraph examination at some time in their life.

** Denotes that these participants were previously administered a Specific-Issue polygraph examination at some time in their life.

group of participants, including the directed-lie control questions. However, the term "Control" was omitted from the description of the term "Directed Lie Question(s)" to replicate an actual PV examination where the term "Control" question would not be used. Each group of participants was then issued a questionnaire reflected on the following page, containing the nine potential response elements plus a question regarding the effect of discussing the DL question(s) between charts. They were then asked to place themselves in the role of a guilty examinee who had in fact stolen the $15,000.00 from their employer, and they were now each being administered a PV examination. The participants were also informed of the meaning of the term "countermeasures" as used in the questionnaire. The first page of the questionnaire sets forth the scenario and lists the two relevant test questions, followed by the two directed-lie test questions. That first page also sets forth the advice and instructions normally given to the examinee when introduced to the directed-lie questions. The participants/examinees were also advised of the reliability requirement that necessitates the administration of three charts or repetitions of the test questions, with a few minutes' break in between each chart, at

which time the directed-lie questions are again discussed with them. (See questionnaire for details).

The participants were asked to read the first page of the questionnaire, and if there were no questions regarding the information contained therein, to proceed and circle their answers to the nine questions contained in the questionnaire. The instructions in the paragraphs marked with an asterisk on the first page of the questionnaire were taken almost verbatim from a study on the directed-lie by Horowitz, et al (1997).

Each group proctor (not the authors) then collected the questionnaires, and placed his/her initials on each one to authenticate them, before releasing them to the authors.

QUESTIONNAIRE

You are *Guilty* of stealing $15,000.00 from your employer and are now submitting to a psychophysiological veracity (PV) examination using the polygraph. Please answer each of the following questions as if you were in fact Guilty of the crime.

The two relevant test questions on the test are as follows:

1. Did you steal that $15,000.00 from your place of employment?
2. Regarding that $15,000.00 discovered missing from the safe at ABC Market on 20 July 1998, did you steal that money?

The two Directed Lie Questions on the same test are as follows:

3. In your entire life, did you ever steal even one thing?
4. Have you ever told a lie?

Note: The procedure is that you are directed to answer "NO" to both of the above Directed-Lie Questions, without revealing any information or admissions to the polygraphist.

*You were advised during the pretest interview when the Directed-Lie Questions were reviewed with you, that it was necessary to include these questions that both you and the examiner knew were being answered with lies. It is important to determine if your reactions to the relevant (crime) questions are the same or different from your reactions when you lie to the Directed-Lie Questions.

*You were also advised that these questions would make it possible to ensure that you would continue to react appropriately when lying and when being truthful during the test. To increase the salience of your lies to the Directed-Lie Questions, you are instructed to think of a specific instance when you have actually committed the act embodied in the question, not to tell the examiner what it was, and to think of it when you answer "NO" to the Directed Lie during the test.

As a matter of procedure, the test containing the above relevant and directed-lie questions was administered to you three times, with a few minutes break in between each test to allow your arm wrapped with a blood pressure cuff to return to normal. In between those charts or repetitions during the aforesaid break, the polygraphist discussed with you again only the Directed-Lie questions and asked you if the Directed-Lie questions were clear and if you were aware that you were lying when you answered them.

Questions:

1. Inasmuch as you were *directed* to lie to questions 3 and 4 above and the polygraphist does not want you to make any admissions regarding those directed-lie questions, did you have any "fear of being detected in a lie" to either of these two Directed-Lie Questions?
   Circle one: YES NO

2. As a Guilty examinee, were you "Afraid" or were you "Hopeful" that an error (misdiagnosis) would be made on the test regarding either of the above Directed-Lie Questions 3 and 4?
   a. *Circle Yes or No:* Afraid YES NO
   b. *Circle Yes or No:* Hopeful YES NO

3. As a Guilty examinee, were you afraid that a physiological comparison would be made between your known-lie to the Directed-Lie Questions (# 3 & 4) and the two relevant (crime) questions numbered 1 and 2 above?
   Circle one: YES NO

4. a. As a Guilty examinee, did you perceive the Directed-Lie Questions as a threat to the outcome of the test in that it would help identify your lies to the relevant (crime) questions?
   Circle one: YES NO

   If your answer is YES, please answer (b) below:

   b. Did you consider the Directed-Lie Questions to be:
   Circle one:
   (1) of a lesser threat than the Relevant Questions?
   (2) of an equal threat to that of the Relevant Questions?
   (3) of a greater threat than the Relevant Questions?

5. As a Guilty examinee, did you think that the Directed-Lie Questions would expose similar prior offense(s) that you have committed which might suggest that you committed the current offense?
   Circle one: YES NO

6. As a Guilty examinee, did you experience shame-embarrassment at being directed to lie to questions 3 and 4?
   Circle one: YES NO

7. As a Guilty examinee, did you perceive any relationship or connection between the Directed-Lie Questions 3 and 4 and the Relevant (crime) Questions 1 and 2?
   Circle one: YES NO

8. As a Guilty examinee, if you knew how to use a physical or mental countermeasure, would you have employed one when asked the Directed-Lie Questions 3 and 4 during the test?
   Circle one: YES NO

9. When the Directed-Lie Questions were reviewed and discussed with you again between the administration of the tests (charts), did the fact that only the Directed-Lie Questions were again reviewed with you in between the tests (charts), increase, decrease or have no effect on your apprehension about those Directed-Lie Questions?
   Circle one:
   a. Had no Effect.
   b. Increased Apprehension.
   c. Decreased Apprehension.

********** **End of Questionnaire** **********

Table 3 reflects the answers provided to each question on the Questionnaire for each group. The answers for each group were then totaled and its percentage reported.

Table 3

Group DLCQ Questionnaire Results

	Questions & Participant Answers												
	1		2a		2b		3		4a		4b		
Groups	Y	N	Y	N	Y	N	Y	N	Y	N	1	2	3
1	1	15	3	12	12	4	13	3	15	1	0	6	9
2	0	17	1	16	14	3	15	2	14	3	0	4	10
3	4	13	2	15	14	3	16	1	15	2	1	6	8
4	0	11	0	11	11	0	11	0	11	0	0	3	8
5	2	12	0	14	13	1	13	1	13	1	1	4	8
6	1	9	0	10	10	0	10	0	10	0	0	4	6
7	1	11	0	12	12	0	11	1	11	1	1	4	6
8	3	17	1	19	19	1	18	2	18	2	4	13	1
TOTALS	**12**	**10**	**7**	**10**	**105**	**12**	**10**	**10**	**107**	**10**	**7**	**44**	**56**
%	**10**	**90**	**6**	**93**	**90**	**10**	**91**	**9**	**91**	**9**	**6**	**38**	**48**

	Questions & Participant Answers										
	5		6		7		8		9		
Groups	Y	N	Y	N	Y	N	Y	N	a	b	c
1	1	15	0	16	16	0	14	2	3	13	0
2	2	15	1	16	16	1	14	3	3	13	1
3	3	14	3	14	14	3	15	2	3	13	1
4	0	11	0	11	11	0	11	0	0	11	0
5	4	10	0	14	14	0	12	2	2	12	0
6	3	7	1	9	10	0	8	2	2	8	0
7	0	12	2	10	11	1	11	1	3	9	0
8	7	13	2	18	19	1	19	1	1	17	2
TOTALS	**20**	**97**	**9**	**10**	**111**	**6**	**10**	**13**	**17**	**96**	**4**
%	**17**	**83**	**8**	**92**	**95**	**5**	**89**	**11**	**15**	**82**	**3**

Note: Percentages were rounded to the nearest whole number.
Some total responses in 4b have a deficit corresponding to the negative responses in 4a. Only affirmative answers in 4a require a response in 4b. See Questionnaire.

Table 4

Data Analysis of Group DLCQ Questionnaire Results

Goodness of Fit Chi-Square Test

Question #	Answer	Observed	Expected	Chi-Sq	p= < .0001	Relates to Table 1 Potential Response Element Number
1.	Y	12	58.5	73.92	Yes	
	N	105	58.5	DF=1		1
2a.	Y	7	58.5	88.93	Yes	
	N	107	58.5	DF=1		2
b.	Y	105	58.5	73.92	Yes	
	N	12	58.5	DF=1		3
3.	Y	107	58.5	80.42	Yes	
	N	10	58.5	DF=1		4
4a.	Y	107	58.5	80.42	Yes	
	N	10	58.5	DF=1		5
b.	1	7	35.7	36.55	Yes	
	2	44	35.7	DF=2		5
	3	56	35.7			
5.	Y	20	58.5	50.7	Yes	
	N	97	58.5	DF=1		6
6.	Y	9	58.5	83.77	Yes	
	N	108	58.5	DF=1		7
7.	Y	111	58.5	94.23	Yes	
	N	6	58.5	DF=1		8
8.	Y	104	58.5	70.78	Yes	
	N	13	58.5	DF=1		9
9.	a.	17	39	127.13	Yes	
	b.	96	39	DF=2		Discussion of DLCQ between charts (tests)
	c.	4	39			

O - Observed, **E** - Expected, **DF** - Degrees of Freedom, **Chi Sq** - Chi-Square value, **p** - probability

For the data in all questions (1 thru 9) the p < .0001 indicates that this is not a chance difference, but is a significant difference for all responses to all of the questions.

Results

The results of this study support the construct validity of all nine Potential Response Elements for the directed-lie control question contained in Table 1. The data in Table 2 reflect that 90% of the participants in the role of guilty polygraph subjects in this study did not have any fear of detection to the directed-lie questions, validating Potential Response Elements (PRE) number 1. Only 6% of the Guilty participants in this study feared an error would be made regarding the directed-lie as opposed to 93% of the guilty participants who were hopeful an error would be made regarding the directed-lie questions, validating PREs number 2 and 3. Ninety-one percent of the guilty participants were afraid that a physiological comparison would be made between their known-lies to the directed-lie questions and the relevant (crime) questions, validating PRE number 4; and 91% of the Guilty participants perceived the directed-lie questions as a threat to the outcome of the PV test in that it would help identify their lies to the relevant (crime) questions, validating PRE number 5. Thirty-eight percent of the guilty participants considered the directed-lie questions an equal threat to that of the relevant questions and 48% considered the directed-lie questions a greater threat than the relevant questions, while only 6% of the guilty participants considered the directed-lie questions to be of a lesser threat than the relevant questions. Eighty-three percent of the guilty participants did not think that the directed-lie questions would expose similar prior offense(s) that they may have committed which might suggest that they had committed the current offense, thus validating PRE number 6. Ninety-two percent of the guilty participants did not feel that they would experience shame-embarrassment at being directed to lie to the directed-lie questions, validating PRE number 7. Ninety-five percent of the guilty participants perceived a relationship and connection between the directed-lie questions and the relevant (crime) questions, validating PRE number 8. Eighty-nine percent of the guilty participants would use a physical or mental countermeasure when asked the directed-lie question(s) during the PV test, validating PRE number 9. In addition, 82% of the guilty participants indicated that the discussion of the directed-lie questions between the administration of the tests (charts) would increase their apprehension about the directed-lie questions, which supports Backster's Zone Comparison Technique Rules contained in his Tri-Zone Reaction Combinations Table appended to this study, of which certain relevant combinations are articulated in the body of this study.

This study supports the assertions reflected in Table 1 that five of the nine elements, specifically numbers 3, 4, 5, 8, and 9, may elicit the guilty examinee's psychological set onto the directed-lie questions with a corresponding potential response and possible false negative test result. It should be noted that any one of the aforesaid five elements has the potential of causing a false negative.[8]

Conclusion

The results of this study confirm the conclusions of a previous study by this author (Matte, 1998) that the directed-lie control question lacks construct and criterion validity[9] and contains a significant number of potential response elements capable of producing false negatives. This study further indicates that, except for those instances

[8] This refutes the assertion by Honts & Gordon (1999), that Table 1 previously published in Matte (1998) and reflected in this study "seems to assert that the emotion of fear is a necessary state for the psychophysiological detection of deception." In fact, Table 1 lists 9 different elements which may elicit a response from the control questions (PLCQ & DLCQ).

[9] Definitions of face validity, construct validity, and criterion validity may be found in Chapter 3, Forensic Psychophysiology Using The Polygraph, J. A. Matte (1996); Chapter 3, Office of Technology Assessment (OTA) (1983). Scientific Validity of Polygraph Testing – A Research Review and Evaluation; and Psychometric theory: 3rd Edition, J. C. Nunnally and I. H. Bernstein (1994).

where remedial action is necessary as articulated in Backster's Tri-Zone Reaction Combinations Table, the discussion of the directed-lie control question between charts (tests) is a prescription for false negative results.

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"TRI-ZONE" REACTION COMBINATIONS

COMBINATION			INDICATION (Backster Zone Comparison Test)	REMEDY
A	(r)	r	A1 PRESENCE OF RESPONSE TO ONE OR BOTH RED ZONE QUESTIONS INDICATES DECEPTION REGARDING TARGET ISSUE	A2 NO REMEDY NECESSARY; RED ZONE QUESTIONS HAVE BEEN FORMULATED AS IDEALLY AS POSSIBLE; RED ZONE QUESTIONS FUNCTIONING AS DESIGNED
	dd	g	A3 LACK OF RESPONSE TO BOTH GREEN ZONE QUESTIONS BECAUSE OF DAMPENING BY RED ZONE QUESTION RESPONSES INDICATES DECEPTION REGARDING TARGET ISSUE	A4 NO REMEDY NECESSARY; NO REASON TO BELIEVE GREEN ZONE QUESTION STRUCTURE INADEQUATE; GREEN ZONE QUESTIONS FUNCTIONING AS DESIGNED
		b	A5 LACK OF RESPONSE TO BOTH BLACK ZONE QUESTIONS INDICATES THAT NO OUTSIDE ISSUE BOTHERING SUBJECT	A6 NO REMEDY NECESSARY; EXAMINER HAS SUBJECT'S CONFIDENCE REGARDING AVOIDANCE OF UNREVIEWED QUESTIONS EMBRACING OUTSIDE ISSUE
B		r	B1 LACK OF RESPONSE TO BOTH RED ZONE QUESTIONS INDICATES TRUTHFULNESS REGARDING TARGET ISSUE	B2 NO REMEDY NECESSARY; RED ZONE QUESTIONS HAVE BEEN FORMULATED AS IDEALLY AS POSSIBLE; RED ZONE QUESTIONS FUNCTIONING AS DESIGNED
	(g) tt	g	B3 PRESENCE OF RESPONSE TO ONE OR BOTH GREEN ZONE QUESTIONS INDICATES TRUTHFULNESS REGARDING TARGET ISSUE, AS NO OTHER ZONE IS DAMPENING OUT GREEN ZONE	B4 NO REMEDY NECESSARY; NO REASON TO BELIEVE GREEN ZONE QUESTION STRUCTURE INADEQUATE; GREEN ZONE QUESTIONS FUNCTIONING AS DESIGNED
		b	B5 LACK OF RESPONSE TO BOTH BLACK ZONE QUESTIONS INDICATES THAT NO OUTSIDE ISSUE BOTHERING SUBJECT	B6 NO REMEDY NECESSARY; EXAMINER HAS SUBJECT'S CONFIDENCE REGARDING AVOIDANCE OF UNREVIEWED QUESTIONS EMBRACING OUTSIDE ISSUE
C		r	C1 LACK OF RESPONSE TO BOTH RED ZONE QUESTIONS USUALLY INDICATES TRUTHFULNESS REGARDING TARGET ISSUE; THIS RULE NULLIFIED BY BLACK ZONE QUESTION RESPONSE	C2 NO REMEDY NECESSARY; RED ZONE QUESTIONS WILL BE FUNCTIONING AS DESIGNED AFTER BLACK ZONE QUESTION RESPONSE SUBSIDES
	?	g	C3 LACK OF RESPONSE TO GREEN ZONE AND TO RED ZONE USUALLY INDICATES SERIOUS GREEN ZONE DEFECT. THIS IS NULLIFIED BY BLACK ZONE RESPONSE	C4 NO REMEDY NECESSARY; NO CAUSE TO BELIEVE GREEN ZONE QUESTION STRUCTURE INADEQUATE; RECHECK AFTER RESPONSE TO BLACK ZONE QUESTION SUBSIDES
	(b)	b	C5 PRESENCE OF RESPONSE TO ONE OR BOTH BLACK ZONE QUESTIONS INDICATES OUTSIDE ISSUE BOTHERING SUBJECT	C6 EXAMINER MUST GAIN SUBJECT'S CONFIDENCE REGARDING AVOIDANCE OF UNREVIEWED QUESTIONS EMBRACING OUTSIDE ISSUE
D	(r)	r	D1 PRESENCE OF RESPONSE TO ONE OR BOTH RED ZONE QUESTIONS INDICATES DECEPTION REGARDING TARGET ISSUE	D2 NO REMEDY NECESSARY; RED ZONE QUESTIONS HAVE BEEN FORMULATED AS IDEALLY AS POSSIBLE; RED ZONE QUESTIONS FUNCTIONING AS DESIGNED
	(g) ?d	g	D3 PRESENCE OF RESPONSE TO ONE OR BOTH GREEN ZONE QUESTIONS IN ADDITION TO RED ZONE QUESTION INDICATES SERIOUS GREEN ZONE QUESTION DEFECT	D4 REDUCE INTENSITY OF GREEN ZONE QUESTIONS BY ALTERING SUBJECT AGE CATEGORIES OR CHANGING SCOPE OF GREEN ZONE QUESTIONS
		b	D5 LACK OF RESPONSE TO BOTH BLACK ZONE QUESTIONS INDICATES NO OUTSIDE ISSUE BOTHERING SUBJECT	D6 NO REMEDY NECESSARY; EXAMINER HAS SUBJECT'S CONFIDENCE REGARDING AVOIDANCE OF UNREVIEWED QUESTIONS EMBRACING OUTSIDE ISSUE
E	(r)	r	E1 PRESENCE OF RESPONSE TO ONE OR BOTH RED ZONE QUESTIONS INDICATES DECEPTION REGARDING TARGET ISSUE	E2 NO REMEDY NECESSARY; RED ZONE QUESTIONS HAVE BEEN FORMULATED AS IDEALLY AS POSSIBLE; RED ZONE QUESTIONS FUNCTIONING AS DESIGNED
	d	g	E3 LACK OF RESPONSE TO BOTH GREEN ZONE QUESTIONS BECAUSE OF DAMPENING BY RED ZONE QUESTION RESPONSE; INDICATES DECEPTION REGARDING TARGET ISSUE	E4 NO REMEDY NECESSARY; NO REASON TO BELIEVE GREEN ZONE QUESTION STRUCTURE INADEQUATE; GREEN ZONE QUESTIONS FUNCTIONING AS DESIGNED
	(b)	b	E5 PRESENCE OF RESPONSE TO ONE OR BOTH BLACK ZONE QUESTIONS INDICATES OUTSIDE ISSUE BOTHERING SUBJECT	E6 EXAMINER MUST GAIN SUBJECT'S CONFIDENCE REGARDING AVOIDANCE OF UNREVIEWED QUESTIONS EMBRACING OUTSIDE ISSUES
F	(r)	r	F1 PRESENCE OF RESPONSE TO ONE OR BOTH RED ZONE QUESTIONS INDICATES DECEPTION REGARDING TARGET ISSUE	F2 NO REMEDY NECESSARY; RED ZONE QUESTIONS HAVE BEEN FORMULATED AS IDEALLY AS POSSIBLE; RED ZONE QUESTIONS FUNCTIONING AS DESIGNED
	(g) ?d	g	F3 PRESENCE OF RESPONSE TO ONE OR BOTH GREEN ZONE QUESTIONS IN ADDITION TO RED ZONE RESPONSE INDICATES SERIOUS QUESTION DEFECT IN GREEN ZONE QUESTIONS	F4 REDUCE INTENSITY OF GREEN ZONE QUESTIONS BY ALTERING AGE CATEGORIES OR CHANGING SCOPE OF GREEN ZONE QUESTIONS
	(b)	b	F5 PRESENCE OF RESPONSE TO ONE OR BOTH BLACK ZONE QUESTIONS INDICATES OUTSIDE ISSUE BOTHERING SUBJECT	F6 EXAMINER MUST GAIN SUBJECT'S CONFIDENCE REGARDING AVOIDANCE OF UNREVIEWED QUESTIONS EMBRACING OUTSIDE ISSUE
G		r	G1 LACK OF RESPONSE TO BOTH RED ZONE QUESTIONS INDICATES TRUTHFULNESS REGARDING TARGET ISSUE	G2 NO REMEDY NECESSARY; RED ZONE QUESTIONS HAVE BEEN FORMULATED AS IDEALLY AS POSSIBLE; RED ZONE QUESTIONS FUNCTIONING AS DESIGNED
	(g) t	g	G3 PRESENCE OF RESPONSE TO ONE OR BOTH GREEN ZONE QUESTIONS INDICATES TRUTHFULNESS REGARDING TARGET ISSUE; NO OTHER ZONE IS DAMPENING OUT GREEN ZONE	G4 NO REMEDY NECESSARY; NO CAUSE TO BELIEVE GREEN ZONE QUESTION STRUCTURE INADEQUATE; GREEN ZONE QUESTIONS FUNCTIONING AS DESIGNED
	(b)	b	G5 PRESENCE OF RESPONSE TO ONE OR BOTH BLACK ZONE QUESTIONS INDICATES OUTSIDE ISSUE BOTHERING SUBJECT	G6 EXAMINER MUST GAIN SUBJECT'S CONFIDENCE REGARDING AVOIDANCE OF UNREVIEWED QUESTIONS EMBRACING OUTSIDE ISSUE
H		r	H1 LACK OF RESPONSE TO BOTH RED ZONE QUESTIONS STILL INDICATES TRUTH REGARDING TARGET ISSUE; THIS SYSTEM BASED ON SUBJECT CAPABILITY OF RESPONSE	H2 NO REMEDY NECESSARY; RED ZONE QUESTIONS HAVE BEEN FORMULATED AS IDEALLY AS POSSIBLE; RED ZONE QUESTIONS FUNCTIONING AS DESIGNED
	t?	g	H3 LACK OF RESPONSE TO BOTH GREEN ZONE QUESTIONS IN ADDITION TO LACK OF RESPONSE TO RED ZONE QUESTIONS INDICATES SERIOUS GREEN ZONE QUESTION DEFECT	H4 INCREASE INTENSITY OF GREEN ZONE QUESTIONS BY ALTERING AGE CATEGORIES OR CHANGING SCOPE OF GREEN ZONE QUESTIONS
		b	H5 LACK OF RESPONSE TO BOTH BLACK ZONE QUESTIONS INDICATES NO OUTSIDE ISSUE BOTHERING SUBJECT	H6 NO REMEDY NECESSARY; EXAMINER HAS SUBJECT CONFIDENCE REGARDING AVOIDANCE OF UNREVIEWED QUESTIONS EMBRACING OUTSIDE ISSUE