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APPLICANT SCREENING POLYGRAPH EXAMINATIONS

By

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In 1979 in San Diego Frank Horvath, who was an expert polygraph examiner before he earned his Ph.D., delivered a blast to the assembled examiners which was richly deserved, but was probably taken by most of those present as being aimed at the other guys. Dr. Horvath made one comment with which we thoroughly agree. He remarked that it is perhaps unfortunate that the polygraph technique is so powerful that even the most incompetent, the most venal, the most unethical examiners still get good results. One reason for this being so unfortunate is that the market place does not operate to put the chart rollers out of business because of the poor results caused by their ignorance, greed, and incompetence.

This paper arose from a study in which the authors undertook to assist a small police department in suburban Virginia to design a screening test for their police applicants which would be effective and which would reflect proper application of polygraph techniques. The authors have also had occasion in recent years to examine the operations of other police departments against which allegations of discrimination had been raised. Also, the authors have been called upon to testify as expert witnesses in cases involving applicant screening. One recent case went to a six-figure settlement before the author even had an opportunity to testify. The examiners who conducted the tests which were under attack made such a poor impression when they testified that the insurance company settled, rather than take a chance on losing the full amount of the suit.

The point of all this is that the polygraph schools, in general, are doing a poor job of teaching applicant screening. There is, of course, always the possibility that the students are not putting into practice what they were taught.

It might be useful to take a look at why the polygraph schools are doing such a poor job in this area of applicant screening. The answer is relatively simple. Most active polygraph schools teach some variety of control question techniques as its primary technique, and any control question technique just will not work well in a personnel screening test. There is no way you can run two charts to verify each issue in a broad, multiple-element test. Even then, some of the standard controls involved with theft, hurting anyone, or misconduct can become relevant questions in a personnel screening test. Even the only school which teaches Relevant/-Irrelevant Technique as its primary technique does not emphasize screening, and we always had to put our men trained there through a further training program after they had completed the course.

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From its earliest stages until today the polygraph has been considered to be an adjunct to a criminal investigation, and even today we do most of our bragging about persons found innocent of or convicted of crimes through the use of the polygraph. Under these circumstances it is entirely understandable that the major emphasis has been on developing techniques to resolve specific-allegation problems. Thus, the various control question tests, all variations of John Reid's original inspiration, sprang into being. Complex and multitudinous stimulation techniques have been devised to take care of and to prevent problem situations peculiar to control question techniques. We will concede that all this was entirely proper when nine out of ten tests which were run by commercial and police examiners were specific tests, but we doubt that this is still the case.

Probably no one knows how many screening tests are being conducted in the United States today, but considering the number of commercial examiners (and the number of moonlighting police and government examiners) the total would probably be surprising. This is especially true in view of what we consider to be the absolutely abominable case load carried by many commercial examiners. We do know one thing, however, many of these screening tests are done very poorly, and when they become a matter of litigation, which we can expect to be a more frequent occurrence in the future, it is very difficult to justify in terms of psychology, physiology, or even common sense what is being done in many of these tests. One set of charts I reviewed in a recent lawsuit asked all the questions which were supposed to be asked in the standard test used by the company, but they were asked three to five seconds apart. Cross examination developed that the examination was the last of the day. The examiner was tired after running seven previous tests, and he was in a hurry to get home from a field trip. Even though the polygraph technique may be so powerful that it is almost impossible for it not to work, it is obvious that many personnel screening examiners are testing this hypothesis to the limit.

One self-appointed expert is preaching that screening tests could not possibly work and that the polygraph field should give up forthwith conducting such tests. Many of us find his claim to expertise debatable, since he has apparently conducted only approximately 400 meaningful tests, none of which was a screening test. We recall many years ago getting into a spirited discussion with Cleve Backster who was then (and may still be) teaching his students that a screening test was not a polygraph test. This seemed to us to be a rather narrow-minded point of view, to limit the definition of a polygraph test only to those things which could be encompassed by a Zone Comparison test. This seemed especially inappropriate in a man who is so open-minded in his approach to the threshholds of perception among plants and crustaceans.

It is undoubtedly the use of the polygraph as a screening tool which is the focus of most of the anti-polygraph propaganda which is being used to justify anti-polygraph legislation on the state and national level. It would be very naive to blame all of this on applicant testing. It is the employees who are doing the stealing, the employees whom the unions are striving to protect at any cost, regardless of their guilt. It is the employees for whom the ACLU files law suits, since so far, at least, no one has set forth a proposition that an applicant has a right to a specific job in private industry. But the opponents of polygraph are pointing piously to excesses in applicant testing, and using these as justification

for banning the polygraph where it could affect initial or continued employment.

We believe that now, when the APA is trying to get the equivalent of national licensing legislation, now is the time to clean up our act. One answer to poor screening tests is the answer which some scientisits would have us adopt. Often these men are active ACLU sympathizers so their advice might not be completely scientific and objective. Their solution ignores the critical need for the polygraph as an aid to identify unsuitable applicants and employees. It throws out the baby with the bath water. They also fail to acknowledge that they do not know how to conduct a screening test.

This is the situation which we propose to remedy today. First, as to our claim of expertise. Both of the authors were employed by the federal government in programs which pioneered in the use of the polygraph for screening applicants and employees for initial and continued employment involving intelligence information of the very highest levels of secrecy. We conducted examinations involving everything from petty misconduct up to treason and espionage. We have conducted these examinations in multiple thousands, examinations where the security of the nation could be literally riding on the validity and the reliability of the test. We will defer to the expertise of leaders in the field of control question testing, but we remain to be convinced of anyone who knows more about screening than we do.

We believe that the time is long overdue for polygraph examiners to realize that the most complex, most difficult, and most important examinations they will ever conduct are personnel screening examinations. In comparison, the typical specific test becomes fairly simple. The suspect either did it or didn't do it. Except for the interrogational skill necessary to elicit a confession, the veriest of rookies could run such a test, especially if all he has to do is to fill in the blanks in an interview outline. The Subject in a personnel screening examination is not a criminal suspect. He is a citizen who has volunteered to undergo a distasteful process in order to gain something of importance to him -- a job. He has a right to expect and should be treated with courtesy, deference, and respect. Applicants should not be herded like cattle into some storage room, subjected to a 15-minute travesty on a polygraph examination, and dismissed with the threat that the process will be repeated in the future at the whim of the employer. We submit that we have enough trouble with the unions and the civil libertarians without providing them with ammunition like this.

Well, if the control question test is worthless in personnel screening because of its inherent limitations in scope, what is the examiner to do? The answer is obvious -- some form of the R/I test will have to be used. The trouble is that R/I has been defined by some rather uninformed experts as anything which is not a control question test. As a result graduates of many of the polygraph schools untrained in R/I techniques, untrained in any of the principles of personnel screening, have extemporized wildly. They have provided my good friend, Cleve Backster, with ample evidence that some screening tests, at any rate, are hardly to be described as polygraph tests.

The trouble is that R/I has been getting a bad name from some overly

zealous admirers of control question testing. Actually, we have never heard of a study which attempted to compare the relative accuracy and validity of R/I and control question testing on the same examinees either in the laboratory or in the real life setting. This is something which needs doing, if for no other reason, so that polygraph examiners can stop throwing rocks at each other.

If we are going to win our argument with Cleve, we must demonstrate clearly that our recommended personnel screening examination is indeed a polygraph examination. This requires us, then, to define a polygraph examination in such a way as to encompass currently acceptable techniques and to provide room for the even better techniques which we have not yet discovered. If good R/I tests and good control tests both work, and most fair-minded examiners will agree that they do, then it might be possible to discover elements in common which can be considered to be characteristic of any good polygraph examination. We may also say in more guarded terms that any examination which does not possess these characteristics certainly may be suspected of reduced validity and reliability. We say "in more guarded terms" because we have to keep in mind the Horvath Hypothesis -- that the polygraph will work, almost regardless of what we do to screw it up. The same psychological and physiological principles underlie both techniques, and we much be certain, regardless of whether we are administering a specific test or a screening test, that our procedures are designed to stimulate autonomic response from the guilty person and relieve the anxiety of the innocent person.

Pretest Question Review

The first of these universal procedures which we would like to suggest is the pretest question review. We believe that each relevant question must be reviewed in advance in all necessary detail. Note that it is not necessary to review irrelevant questions, since we are not trying to enhance autonomic response by a prewarning of the exact wording of these questions. It is perfectly adequate to say that there will be other questions designed to establish the identity of the examinee or to establish his regular reaction pattern. Or if the examiner prefers, he can review the irrelevant questions. As far as we know, there has never been a study which showed that unrehearsed irrelevant questions, or unrehearsed controls, for that matter, had any adverse effect on the test. Examiners will have to exert care here because some examiners who are overly zealous in this area have written into state laws a requirement that no unrehearsed questions may be used. It would have been perfectly adequate to require that all relevant questions must be rehearsed. This is typical of what is so very wrong with the field today; the man who drafted the laws did not know -- or perhaps did not care that R/I examinations customarily use unrehearsed controls.

We do not believe that anyone will argue seriously against the absolute necessity for reviewing relevant questions thoroughly and completely during the pretest interview. And if a control technique is to be used, requiring the comparison of the response to the relevant questions and the controls, then the controls must also be rehearsed. This is only common sense. If we expect the fear of detection or the fear of the unplesant consequences of detection to be in operation during the test, we should provide the guilty person with advance notice that the question will be asked.

This question review is also quite important in regard to relieving the anxiety of the innocent examinee. It sets out the scope of the questions, and establishes the limits in time or significance for each question. While it is tremendously important in screening cases to let the Subject know what you are going to ask, it is equally important to let him know what you are not going to ask. This also gives the examiner an opportunity to define the relevant questions carefully. Sure, all of us ascribe to the principles of good question formulation, and we all laugh at the horrible examples which Norm Ansley sets forth in his excellent lectures on the topic, but unless we work hard at it during the pretest interview, we can never be sure the Subject understood each relevant question in the context in which we intended to ask it. Of course, this also means that the validity of our drawing a conclusion on his reaction, or lack of reaction, for that matter, is definitely reduced.

We must make the Subject explain the question. Make him read it back to you in his own words. Then use his own words during the test. If he is more comfortable in a foreign language, the chances are he thinks in that language, and you will get better autonomic stimulation in that language. Use that language during the examination, even if you have to hire an interpreter to read the question for the test.

Question Importance

The second of these universal principles is that of question importance. Each relevant question on a polygraph examination should be so important that we should be able to rely upon its serving as a threat to the person and thus an autonomic stimulant. Regardless of whether it is a control test or an R/I test, a screening test or a specific test, each relevant question should be of such obvious importance that being caught in a lie would clearly justify unpleasant consequences for the Subject. Perhaps to oversimplify the matter, trivial questions may very well result in trivial reactions. This is why the authors have always preferred to use questions of identity as irrelevant questions, since a speciously plausible reason may be given to the Subject as to why they are being asked. (The examiner must be certain he is testing the right person.) We have difficulty with irrelevant qeustions like, "Are you wearing brown shoes?" or, "Do you drink coffee?" since we cannot see why anyone would care.

Most of us refuse to give demonstrations of the polygraph using live Subjects before an audience. The trouble is that the Subject, having nothing to lose, frequently and embarrassingly fails to react. The same potential exists if a client insists that you clutter up a screening test with trivial questions, questions that the client should not and the Subject may not care about in the slightest. It is very easy to get minimal or no reactions to questions in this category, even though the Subject is lying through his teeth as he answers the question.

The Polygraph is Not a Lie Detector

We think every examiner should be required to repeat five times before he enters any interview, "The polygraph is not a lie detector." Sure, they taught us this in training school, but we tend to forget it through the years. If the Subject doesn't care, if he knows nothing is going to happen to him, he will not react on the charts.

We can only emphasize as strongly as we can, the questions on your screening test must be important. They should be so obviously important that the Subject will accept without hesitation that they would be grounds for denying employment or for summarily firing him if he is an employee. Each of those relevant questions should trigger his autonomic nervous system to the point where his sphincter muscles nearly pucker with fear when he tries to lie to you. When the relevant questions on your screening test have that kind of impact, you are going to cut way down on those false positive and negative reactions which seem to be such a favorite hypothesis of the psychological fraternity.

Question Repetition

The third, and perhaps the most important aspect of a good examination, regardless of technique is that of question repetition. There is absolutely no way that you are going to design a valid, accurate, reliable polygraph examination unless you repeat the relevant questions often enough to establish that chance, stray thoughts, or outside stimuli could not possibly account for the consistent reactions which are occurring. We are dealing with emotions with these instruments and our techniques. Emotions are seldom strictly logical. They taught us many years ago that love, fear, and rage were the three primary emotions, and we have fear working for us in applicant screening -- fear of not getting the job, fear of losing the job, fear of getting caught in a meaningful lie -- a good screening examination must be structured to exploit these fears of the guilty Subject, but also reduce or eliminate them in the honest examinee.

I have always been somewhat puzzled about the heavy emphasis on trust and outside issues which are included in some control tests. My tendency, if an examiner asked me if I was absolutely convinced he wouldn't spring any surprises on him, would be to say, "Hell, no!" If I were going to lie to the examiner, there is no technique known to mankind which would ever make me think he was my friend. Even being truthful, the best he can get out of me would be a grudging respect, and a hope that he would be objective and reasonably impartial. I do not believe we can eliminate the outside issues and the externals in the testing environment which can and do cause reactions to arise out of left field, as far as the purpose of the test is concerned. What we attempt to do is to repeat the questions often enough that we establish clearly that these are not stray thoughts, these are not outside noises, these are not random stimuli, these are not association patterns which are creating such consistent and significant reactions on the charts.

Over and over in the analysis of polygraph screening operations we see tests which contain no repetition of the relevant questions. Some of these men are following faithfully the outlines which were provided for them by accredited schools. One police department in a large southern city gives an examination consisting of two charts. Each contains twelve or thirteen questions, none of which is repeated. On the basis of asking a question once only, the examiners can and do report that the Subject was deceptive, and he is rejected for hire. The man could have been a position reactor, responding to the first question on the examination, or he could be embarrassed by a sex question -- it made no difference. He was reported as being deceptive. The study was originally conducted in response to a civil rights complaint that the polygraph tests were unfairly biased against women and blacks. My report indicated my firm belief that

anyone at all who took that test was being treated unfairly.

Permit me to cite one more example. A few years ago at Delta College a police examiner gave a paper on a screening test for police applicants which he had designed and of which he was obviously proud. It consisted of about 45 relevant qeustions which he asked one by one, limiting each chart to four or five minutes. When we asked from the floor how he could possibly repeat these questions often enough to obtain valid charts, he replied that he designed a control test to verify those to which the person appeared to be reacting. Pushed again as to how he could administer perhaps ten control tests if the person appeared to be reacting in that many areas, he said gravely that he would take the two or three of the most logical areas and design a control test to verify those. It seems to us that we are going around in circles. The polygraph was developed so that interrogators would not have to rely upon hunches and the observation of body language to reach a conclusion of the Subject's truthfulness. Now examiners are using the polygraph to test whether the examiner's hunch or observation of body language was correct.

Those same examiners apparently do not stop to think that the relevant questions are asked at least four times in every control question technique with which I am familiar. This would be the primary relevant paired twice with a control on two charts. Some techniques ask the relevant question three times on each chart. In any event, they are not building their church on the shaky rock of asking the relevant question once. Yet, some of these same men apparently do not hesitate to report that an applicant was lying on his screening test on the basis of the only time the question was asked.

The authors have been preaching the need for question repetition in R/I examinations for many years, but observation of field practices in regard to screening tests makes us doubt whether too many people are listening. When you stop to think about it, if the Subject reacts when we have asked a question once, we know only one thing -- the Subject reacted. We have utterly no idea as to the important thing -- why did he react? He can react for any one of a number of reasons, only one of which was that he was lying to us and is afraid of getting caught. Remember, the polygraph is not a lie detector, and the secondary aspect of emotional responses which it does faithfully and accurately record can be created by many sources. Our function, then, is to design and administer a test which statistically eliminates any other cause besides deception as the reason for reactions we observe on the chart.

The authors have not always in the past been sympathetic to the concerns of the academicians over the false negatives, which would give rise to erroneous conclusions that the Subject was truthful, and the false positives, which would support the far more damaging conclusion that the Subject was deceptive. In specific-incident testing field examiners feel with considerable justification that these fears are groundless. Test and question repetition, guilty complex questions, stimulation and control procedures, and verification of admissions, along with other techniques too numerous to discuss have been devised to meet the real and hypothetical problems which arise in our profession. Many of us have resented bitterly and publicly the respect which the uninformed pronouncements of these Johnny-Come-Lately professors have received.

In our distaste for the self-aggrandizing pronouncements of some of the self appointed instant experts, howver, we should not lose sight of the reality of some of their fears. False positive reactions are possible, simply because the polygraph is not a lie detector. If a question is asked only once, the fear of the consequence of being caught lying is only one of a myriad of external and internal stimuli which can and do create the physiological changes in the chart patterns which we characterize as "reactions." If a question is asked only once during a polygraph examination, there is a very high risk that an isolated response, a nondeceptive response, if you will, may be reported as that the Subject was lying to the question which was being asked at the moment.

Every professional knows that people react somewhat to the first relevant or control question on the examination, that people react to questions they consider accusatory, that people react to questions having anything to do with sex, that people react to a noise in the streets or to a rumbling in their stomachs, that people react because of a distressing memory created by the question -- and that some react for no logical reason that anyone can determine. They also react because they are afraid they are going to be caught in a meaningful lie. Every major polygraph technique in use today has been designed to filter out the confusion caused by the first group of reaction-creating stimuli, while accurately identifying the reactions caused by the fear of detection.

The problem, as we see it, is that the complex safeguards which we have built up by experience to protect the innocent suspect in a criminal case are largely overlooked or ignored in many of the personnel screening tests currently being administered to applicants and employees in industry and commerce. It should be the other way around. Legal due process has elaborate safeguards to protect the innocent, and even those of the guilty whose guilt was established improperly or not proved beyond reasonable doubt. Employees, and especially applicants, have no such comparable protection. Surely it is just as bad to rob a man of his reputation, his employment, and his livelihood by a poor polygraph examination as it would be to assert that he was guilty of a crime, based on a bad test.

Thus the importance of question repetition. The external sources and many of the internal sources of nondeceptive reactions are hardly going to happen each time a question is asked; hence we need not be concerned unless a reaction occurs consistently, regardless of the phrasology of a question and its position on the chart. There is utterly no way you can determine this unless you have repeated the question often enough to eliminate chance as the reason for a reaction. How often must a question be repeated? Certainly at least three times, since this will be the minimum to establish that a reaction, or absence of a reaction, for that matter, is consistent. This is fewer than would be found in two charts of a control question examination, but it makes a reasonable accommodation to the wider scope of the screening test. In the case of questions to which reactions are occurring, competent examiners will ask these more frequently, as standard techniques are employed to isolate and identify the source of the reaction.

In recent years the authors have been involved on several occasions in the review and analysis of commercial and municipal and county polygraph screening operations. We have not hesitated to characterize as inadequate and potentially dangerous any screening operation which did not

provide for at least minimal question repetition.

Control Procedures

Perhaps this is the time, when we are tilting at some sacred windmills to bring up the matter of control procedures. We need a working definition of a control question for our personnel screening test which will hopefully not conflict with the concepts of controls which are used by enthusiasts of both control question tests and R/I tests. There are many aspects to control questions, and we find ourselves frequently fascinated by the often violent discussions about "hot" controls, "weak" controls, controls which include the period of the offense and those which do not. We tend to think of learned medieval scholars discussing gravely the number of angels who could balance on the head of a pin. There are some areas, however, where most of us can agree about controls:

1. Control questions are intended deliberately to create a reaction on the part of a responsive Subject. Never mind whether it is a known or suspected lie, a surprise, or embarrassment at being unable to remember the examiner's name. The means of stimulating the autonomic nervous system are relatively immaterial, as long as they are inoffensive.

2. Control questions indicate the manner in which the Subject exhibits autonomic reactions. Reactions in the pneumograph and cardiosphygmograph patterns are subject to a wide range of individual differences. Galvanograph responses are more predictable, especially if used in self-centering mode, as the authors strongly recommend. Yet, individual Subjects tend to be consistent. The patterns in which they exhibit their greatest reactivity and the way it is displayed tend to be fairly consistent.

3. Control questions indicate the intensity with which the Subject responds to autonomic stimuli. We have no intention of being drawn into a discussion of the theory of psychological set or in basing a conclusion on the analysis of the differentiation between two reactions. Let us agree for the purpose of this discussion that control reactions certainly give some indication of the ability of the Subject to react at that moment and, hopefully, of the intensity with which he may be expected to react to questions of more than minimal impact.

Acceptance of these precepts does not, you will notice, require or imply any conclusions as to truthfulness with this definition of controls. It says only this: Physiologically the Subject does react within the limitations of our instrument to record, and this Subject is not too fatigued, bored, drugged, insane, or otherwise incapacitated to react when we deliberately needle him. This is all we need or should expect in a personnel screening test. You simply cannot pair up each relevant question on a screening test with an appropriate control and expect the Subject to continue to react to the control through at least three repetitions of each pair. The reaction well can be pumped dry very rapidly, and at some unknown time the Subject will lose his ability to react to anything except a charge of dynamite under his chair. This is, by the way, another of the many areas begging for research: How soon, in the polygraph context, does enervation of reactions take place, and how long does it take to recover?

The fact that we do not base our conclusion in screening tests in the

comparison between relevant questions and controls in no way eliminates our need for controls. Remember, the psychophysiologists are concerned about false negatives as well as false positives. In the false negative the Subject does not react, even though he is deceptive, and is thereby reported as truthful. We can see no way to identify the nonreactor without using controls. The obvious question, which we have been asked often in the past, is, "Why do I need controls, when the Subject is reacting all over the place on the charts?" The answer is just as obvious: In screening (R/I) tests no controls are needed as long as the Subject is reacting to one or more of the relevant questions.

In the final analysis it is only when the Subject does not react during a screening test that we need controls. Perhaps we have interrogated, fed back admissions, explained ambiguous questions, discussed outside issues, and done all the things we are supposed to do to clear up reactions. To our immense gratification the reactions have disappeared, but we still do not know the most important thing. Is our Subject still physiologically capable of reacting? If so, we can report that our Subject was truthful. If not, we have identified that our Subject is a nonreactor at the moment and have been spared rendering a false negative report. In a practical sense this can be accomplished only by the skillful use of one or more control questions on the final chart where the Subject appeared to be no longer reacting. If the man does not react to the relevant questions but does react to the controls at the end of testing, the examiner will not be too far wrong in concluding that the man was truthful.

It may seem paradoxical, but a control is not always needed in screening tests with deceptive Subjects. If the person reacts consistently and significantly to one or more of the relevant questions through out the examination, he is normally reported as being deceptive or withholding information in those areas. The control is needed on the final chart when the Subject is not reacting to any of the relevant questions. We still need to know whether he was physiologically capable of reacting to any of the questions before we can say with certainty that he was nondeceptive. Thus, a truthful test needs a control, preferably at or near the end of the final chart, since this establishes the capability of the Subject to react at any time earlier on the chart.

Irrelevant Questions

Another characteristic of a good polygraph examination is the manner in which irrelevant questions are used. It is quite important to intersperse irrelevant questions among the relevant questions in a screening test in order to provide some relief of tension to the Subject. Without this relief it is quite possible that he might become quickly fatigued. The irrelevant questions permit a period of rest and recovery during the examination. Some examiners forget that the proper title of the technique is the Relevant/Irrelevant Technique and design examinations which appear to represent the Relevant/Relevant Technique. They begin, perhaps, with one irrelevant question and then proceed to ask thirteen straight relevant questions. We have actually seen charts where a long-lasting reaction took place to one question and continued into the next relevant question. The examiner reported that the Subject was deceptive to both questions, even though each question was asked only once during the two charts which were administered.

I doubt if any school is teaching its students to ask another relevant question while a reaction is occurring to the previous question. Either you let the first reaction go to extinction before asking another relevant question, or else you ask an irrelevant question to kill the reaction before asking the next relevant question. The authors prefer the latter procedure, since this permits even question spacing down the chart. We believe there should not be more than four straight relevant questions without an intervening irrelevant question. One exception to this might be those cases where the Subject has shown no reaction during two times that a particular irrelevant question was asked. It has become an irrelevant question now, and chart time can be saved by using it as an irrelevant question on the third mandatory use. Note also that the principle of question repetition applies also to irrelevant questions, and they should be repeated just like the relevant questions.

What, then, is the pattern we should observe in a well-designed personnel screening test, as far as the relevant-irrelevant mix is concerned? Each chart should open with two or three irrelevant questions until the pattern stabilizes, and the initial tension dissipates. The rest of the chart should show a mix of relevant and irrelevant questions with one or two irrelevant questions inserted after each three or four relevant questions. As a defense against countermeasures, it is desirable not to use a fixed and predictable pattern which the Subject can anticipate.

It is sometimes difficult for men trained only in a control question technique to realize that the analysis of R/I charts is essentially a zero base analysis. It is not the comparison of the control and its juxtaposed relevant question. It is the relevant question compared with zero, with the irrelevant questions representing zero. For this reason, the irrelevant questions are far more important than the few which are used in most control question tests. It might also be of interest to note in passing that if neither the relevant questions nor the final control exceed the irrelevant questions, the examination is inconclusive. If the Subject over-reacts to everything to the same degree, excessive general nervous tension may be blamed, and, of course, if he reacts to nothing, he would be considered a nonreactor. The analysis does not easily lend itself to numerical evaluation, the latest fad of some control question enthusiasts, but it might be apropos to point out that polygraph charts were being analyzed accurately long before numerical analysis came on the scene. It might also be well to note that many experienced examiners seldom bother with numerical analysis, anyway.

Limits to Scope

The need for question repetition and for the use of interspersed irrelevant questions obviously places limits on the number of relevant issues which can be covered in a personnel screening examination. This is a limitation which many field examiners have been refusing to face. This is why we run into these tests with forty or fifty relevant questions, each asked one time. We would like to address this as the sixth major point in this paper: Personnel screening examinations should be limited to not more than ten relevant questions, although each relevant question may contain lesser included areas. We believe that adherence to this principle is probably the most important element in the design of a screening test which will meet or exceed the validity and reliability of specific-issue tests. For one thing, we have to limit our charts to reasonable lengths

because of the matter of Subject discomfort. We do not agree with the current fad of some examiners to limit charts to three minutes -- by some strange coincidence the length of their control question tests. We are not aware of any objective study of the physiological limits on chart length, but it is sensible to limit Subject discomfort as much as possible. In the last 25 years or so we have had little in the way of Subject complaints when we limited the charts to five minutes or less.

If you ask ten relevant questions three times, and you use at least 15 second question intervals, you have used 7 1/2 minutes of chart time. Now add in approximately 3 minutes for irrelevant questions, overall truth questions and controls, and you have two five-minute charts. Obviously, if you have any problems with any of the relevant questions, you are into the third chart. Nobody said this was easy, but the problems are of manageable proportions.

First of all, you must exert every effort on the client to reduce the number of questions he wants covered. In a question is not important enough to reject an applicant or fire an employee, it has no business in your screening examination. These nice-to-know areas and these questions which represent mere nosiness or prurient curiosity on the part of the employer should be rejected by the examiner. Religious questions are constitutionally prohibited, and sex questions should be asked only where perversion is clearly identifiable as job related. Off-the-job activities that are none of the employer's business should not be touched. Perhaps if some of the employers become the victims of privacy suits under the various federal and state statutes protecting the privacy of the individual, their enthusiasm for unwarranted invasion of the privacy of their applicants and employees might become diminished.

Another approach to the problem of reducing the number of relevant questions is that of grouping subordinate questions under an overall question. In pretest interview the primary question, as well as its subordinate questions, are reviewed with the Subject. He is told the primary question may be asked, or the subordinate questions may be asked one by one. This sets the scene for the subordinate questions to be used as a searching peak in the event of reactions to the primary question. And as a practical matter, the subordinate questions need not be asked at all if there is no reaction to the main question. Many examiners run screening tests as if all of the questions were of the same importance. This is not true, and study of many of these tests with large numbers of relevant questions will usually reveal that most of them could be grouped together under a few primary questions. By using this system the scope of your personnel screening test may remain practically the same while reducing the number of relevant questions from thirty to eight.

The authors were approached by the examiners of a small police department in a county of Virginia which was once rural but is now in a process of rapid urban development. They were having difficulty in their program for polygraph screening examinations for police applicants. Their men were trained by one of the commercial schools which placed little emphasis on applicant testing, and as is so very common, they assigned their most inexperienced examiners to the applicant testing program. We have never understood the rationale for this, but it is common practice.

They used a ten-page questionnaire as the basis for the pretest

interview. It listed 254 questions, some of which seem inappropriate. There were 30 medical questions, many of which would be proper only for a doctor to ask. One, by the way, asked the applicant if he had ever had a "serious" venereal disease. The answers to that one must have been educational. There followed searching questions about debts, family relationships, arrest records, drinking, drugs, sex, loyalty, and so on. The questions were very repetitious and unnecessarily intrusive. This pretest interview was followed by an examination divided into two charts. The complete examination consisted of 28 relevant questions, ten irrelevant questions and eight overall truth questions. Only one question, concerning the use of marijuana, was repeated. There were no controls, and the reason these 28 relevant questions were distilled from the 254 asked on the questionnaire was not clear to us. Although there was an adequate number of irrelevant questions, they were not spaced evening on the test. One mind-boggling question was, "Is there anything in your personal life that would embarrass this department?" That is one that we would be disinclined to answer until the department set forth a list of what it was apt to be embarrassed about.

The procedure we used to design an examination for this department works well, and it is recommended to others who undertake similar projects. First we went through the questionnaire and assigned each question to one of six categories into which it seemed to fall. We then phrased a primary question which would cover anything wrong in the area covered by the category. The last step was to assign questions to subcategories under the primary question, eliminating any repetitious question in the process. Discussion with the examiners established that they were getting the same coverage as with their previous examination with a test that was simpler for them and the Subjects. Preliminary reports indicate they are getting the same amount of information as with the prior test, and both they and their superiors seem happy with the results of the study.

Here is the examination we designed for them:

PRE-EMPLOYMENT EXAMINATION

1. Have you given any false or misleading information on your application?

A. debts
B. employment
C. military records, including court-martials and type of discharge
D. family
E. medical history
F. education

2. Have you used any illegal drugs or narcotics?

A. Marijuana
B. Hashish
C. Heroin
D. LSD
E. PCP
F. THC
G. Mescaline
H. Uppers
I. Downers
J. Buying
K. Selling
L. Dealing

3. Have you ever committed a serious crime?
   A. Theft, including larceny robbery, burglary
   B. Arson
   C. Perjury
   D. Bad checks
   E. Any other felony
   F. Witness to a felony

4. Is there anything in your life for which you could be blackmailed?
   A. Homosexual activity
   B. Mental disorders
   C. Abnormal sex acts
   D. Excessive drinking
   E. Excessive gambling
   F. Adultery (omit if possible)
   G. Sadism - Masochism

5. Do you have any sort of arrest record?
   A. Misdemeanor
   B. Felony
   C. Traffic
   D. Sued
   E. Subpoenaed

6. Have you been involved in any communist, fascist, or terrorist activity?
   A. Yourself
   B. Family
   C. Friends
   D. Associates

Each primary question must be asked at least three times during the complete examination. Insert an irrelevant question after every third or fourth relevant question, and after reactions to relevant questions. Use the subtopics only when necessary to clear up a reaction to the primary question. Use one or more overall truth questions at or near the end of each chart. Use a control question on the final chart if no reactions to the primary questions are observed.

This examination was designed for police applicants; consequently it is much more inclusive than would be expected for the average applicant in commerce or industry. We tried to get them to omit that question regarding adultery, but the chief was adamant. This review took place immediately after a well-publicized scandal in a nearby county after several officers were caught in sexual liaisons in their scout cars during duty hours.

You will notice that this paper does not set for a suggested or mandatory question sequence. We have outlined the principles which should be applied as the conscientious examiner designs his own test. We believe firmly that it should be just as accurate as your current specific test, since the same principles have been used. We also have not succumbed to the temptation to give new names to things which already had them, or to name anything after ourselves. If you insist on names, you might call it Federal Screening Procedures, since these are the tests on which it was based.

In the words of a Baptist preacher friend of ours, "Go forth, and sin no more."

THE VALIDITY OF THE PREEMPLOYMENT POLYGRAPH EXAMINATION AND THE EFFECTS OF MOTIVATION

By

Eileen Israel Correa and Henry E. Adams

Abstract

The present study examined the validity of the preemployment polygraph examination and the effects of motivation on deception detection in an analog situation. Subjects were 40 Research Participants (20 male, 20 females), undergraduates from the University of Georgia. Five females and five males were randomly assigned to each of four groups: Lying-Motivated, Lying-Unmotivated, Truthful-Motivated, and Truthful-Unmotivated. Validity of Experimenter B's subjective ratings of polygraph records as overall Truthful or Lying was 100%, significantly more accurate than chance ($p < .01$); validity of Experimenter B's subjective identifications of individual lie items ranged from 68% to 100%. Objectively, lying responses were characterized by significantly larger increases in conductance for SRL and larger decreases in heart rate than truthful responses; motivation had no overall main effect but interacted with other independent variables on several physiological measures. Results were discussed in light of previous research.

Detection of deception through polygraph examinations is a relatively recent procedure used chiefly by three sectors of society: by the police in criminal investigations, by the government in security matters, and by private industry in screening job applicants and in maintaining security. A great deal of research, comparatively, has been done evaluating criminal applications of the polygraph examination (Abrams, 1973; Orne, Thackray, & Paskewitz, 1972); the Federal Government periodically evaluates its use of the polygraph (e.g., Committee on Government Operations, 1965); but there has been no research evaluating the use of the polygraph by private businesses, specifically in the case of preemployment screening. The present study began research in this area, by evaluating the validity of the polygraph's use in discerning deception in an analog preemployment screening situation.

The interview for preemployment screening is designed to discover whether or not the applicant is guilty of certain actions, involvements, or tendencies that would render him unsuitable for the position in question. The idea is to save the business money by weeding out thieves, narcotics addicts, the physically ill, and poor security risks before they

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are hired. It is assumed that since the polygraph examination works for the police, it will work for the private business, too; but there is no evidence. One major issue in the application of polygraph examinations in the private business is a moral one - the potential for infringement on the individual's rights (Sternbach, Gustafson, & Collier, 1962). Along these lines, Lykken (1974) reasons that given validity as high as 90%, 68% of the applicants who fail the test are actually false-positives; that is, they were telling the truth but failed anyway. His are theoretical figures, based on assumption and not fact. The present study was designed to determine this percentage of false-positives, as well as examining the validity of the preemployment polygraph examination.

The final area explored presently was the role of the respondent's motivation in the detection of deception in this situation. A few studies have investigated its role in criminal-like applications (Davidson, 1968; Gustafson & Orne, 1963, 1965). These studies point out that the degree of motivation and the object of motivation are important determinants of deception detection in the mock-criminal investigations. The present study, finally, manipulated motivation and examined its effects on deception in the preemployment polygraph examination.

Method

Subjects

Subjects were 40 undergraduate Research Participants (RPs), 20 males and 20 females, from the University of Georgia. On the basis of a pre-examination interview, only RPs who had never had a polygraph examination before, were free from acute or chronic illness which could have lessened the validity of test results, and were free from heavy drug usage, either prescribed (excluding birth control pills), or otherwise, were selected. Ten RPs, five males and five females, were assigned to each of four groups: Lying-Motivated (LM), Lying-Unmotivated (LU), Truthful-Motivated (TM), Truthful-Unmotivated (TU). Each RP was scheduled for two sessions, the Initial Screening Session and the Preemployment Polygraph Examination, each lasting approximately 1 1/2 hours. As a further control for physiological variation, each female RP was scheduled for the Preemployment Polygraph Examination only during the second week of her menstrual cycle.

Apparatus

The Preemployment Polygraph Examination was conducted with the RP in an experimental chamber, a sound resistant room in which a constant temperature was maintained. Instrumentation for amplifying and recording the responses was located in this room as were chairs for the RP and Experimenter B. The RP's chair was positioned so that he was unable to see the polygraph recordings but so that Experimenter B could observe him at all times.

All electrodes, including a common subject ground, were attached to shielded cables which were attached to the polygraph. All physiological measurements were recorded on a Grass Model 7 polygraph with four driver amplifiers.

Respiration measures were recorded from a thermistor placed slightly

inside the nostril permitting the most air flow, using a 7P1 low-level DC preamplifier. Recordings were quantified for the 10 second interval following each question and converted to respiration rate in cycles/minutes.

EKG was recorded via gold plate electrodes attached to the right wrist and leg using a 7P4 EKG preamplifier. Beckman electrode cream was the electrolyte. The number of R-waves per 10 second period following each question was determined and converted to heart rate in beats per minute.

The electrodermal response was recorded via Beckman silver-silver chloride electrode 2cm^2 in diameter attached to the volar surface of the right palm and the right forearm. The electrolyte was 25% saline solution in unibase. A SRL/SRR preamplifier providing a constant current of 16MA was interfaced with two driver amplifiers providing one channel for Skin Resistance Level (SRL) and one for Skin Resistance Responses (SRR). The lowest SRL in Kohms in the 10 second period following each question was determined and converted to conductance in microhos, which yielded the highest conductance per period as the SRL measure. Total number of SRRs, defined as 0.1% of SRL, for the 10 second period following each question was also determined.

Procedure

During the Initial Screening Interview, Experimenter A obtained some personal information about each RP for screening and scheduling purposes, explained the purpose and design of the study, answered any questions that the RP had, and requested the RP to sign a consent form and to fill out the Preemployment Data Sheet (adapted from Ferguson, 1966). Experimenter A and the RP then went over the Data Sheet and identified nine potential lie questions. Three potential lie questions were in each of the three sections of the polygraph examination to follow. RPs in the Lying-Motivated (LM) and Lying-Unmotivated (LU) groups were instructed to lie to the nine potential lie questions during the Preemployment Polygraph Examination; RPs in Truthful-Motivated (TM) and Truthful-Unmotivated (TU) groups were instructed to answer all questions, including the potential lie questions, truthfully in the Preemployment Polygraph Examination session. Further, RPs in the TM and LM groups were told that they were competing with nine other RPs in their groups for a $25 reward. The best truth-teller in the TM group on the basis of the polygraph recordings would receive $25; the best liar in the LM group according to the polygraph recordings would also receive a $25 reward. Experimenter A made group assignments, keeping Experimenter B blind as suggested by Marcuse and Bitterman (1946).

One further procedure was carried out in the Initial Screening Session. Obviously, a great deal of the study depended upon the RPS telling the truth about previous activities during this first session. Experimenter A really could not be sure if the RPs were in fact compliantly telling the truth when filling out the Preemployment Data Sheet, and thus it was possible that they might have lied when answering questions later selected as potential lie questions. Therefore, three questions were included in the nine potential lie questions which concerned the RPs activities in the first session and whose truthful answers were obvious, so Experimenter A could be sure of the truthful answer. To accomplish this while keeping

Experimenter B blind, each RP was randomly assigned by Experimenter A to one of two conditions prior to the Initial Screening Session. Half of the RPs (10 males and 10 females) were assigned to the Water condition and, during the first session, received a cup of water from Experimenter A, were instructed to fill out the Preemployment Data Sheet in pencil as opposed to pen, and were left alone while filling out the Preemployment Data Sheet. The other half (10 males and 10 females) in the No Water conditions, received no water, filled out the Preemployment Data Sheet in pen, and were not left alone to fill it out. Subsequently, when making group assignments, Experimenter A balanced groups so that half the RPs in each group were in each condition. Each of the three aspects of this control procedure was included as a potential lie question for each RP. Thus, three of the nine potential lie questions for each RP concerned the first session with half definitely answering truthfully in one direction and the other half answering truthfully in the other direction. One of these control questions was included in each of the three series of questions on the Preemployment Polygraph Examination. In Series I, the control question was close to the beginning of the series of questions; in Series II, the control question was in the middle; and in Series III, the control question was near the end.

When the RP arrived at the Preemployment Polygraph Examination session, Experimenter B gave him Instruction Reminder Sheets and instructed him to read only the one that applied to his group. All were folded with group names on the outside so RPs did not see instructions for other groups. Experimenter B then briefly questioned the RP to make sure he was free from any acute distress, had had a good night's sleep, was not under the influence of drugs or alcohol, and knew how he was to answer all the questions. Experimenter B then explained the purpose of the testing session and answered any questions RP had about it. Next Experimenter B asked the RP all the questions on the Preemployment Data Sheet and noted RP's responses. Experimenter B next cleaned the volar surface of the right hand and the forearm with alcohol, attached all the electrodes, explained the purpose of each, and briefly explained what types of questions would be verified by the polygraph. Experimenter B then turned the polygraph chart on. After a minimum of 20 seconds habituation, Experimenter B began asking the three series of questions in the Preemployment Polygraph Examination, including both relevant and irrelevant probes arranged as suggested by Ferguson (1966). Each question from the Preemployment Data Sheet was either preceded by or followed by an irrelevant norm question. Questions were at least 10 seconds apart. Experimenter B's voice quality and tone remained even throughout questioning, with enunciation clear. After each relevant question, Experimenter B noted any response which subjectively appeared greater than the norm and might possibly be indicative of deception. After each series, the chart was stopped and Experimenter B questioned the RP about all these possibly deceptive responses in the previous series in an effort to clarify the reasons for the larger responses. These questions were rephrased and inserted at the beginning of the next series, interspersed with irrelevant questions. After the Preemployment Polygraph Examination was completed, Experimenter B removed the electrodes, and thanked the RP. Experimenter B then looked over the chart and subjectively assigned an overall classification of "Lying" or "Truthful" to it. Specific questions which Experimenter B subjectively felt were indicative of lying were also identified at this time, and termed individual lie terms.

Results

Subjective Ratings

Subjective ratings made by Experimenter B of whether each RP was overall truthful or Lying during the Preemployment Polygraph Examination were classified as hits or misses. In each of the four groups, there were 10 hits and no misses. Chi-square analyses comparing actual group classifications well beyond chance ($p < .01$) for each group. The overall percentage of accuracy of Truthful or Lying ratings for the four groups (LM, LU, TM, and TU combined) was 100% with 0% or no false-positives. Table 1 depicts the accuracy of these overall subjective ratings.

Table 1
Accuracy of Subject Ratings
of Overall Record

Group	Hits	Misses (false-positives)
TM(Truthful-Motivated)	10 (100%)	0 (0%)
TU(Truthful-Unmotivated)	10 (100%)	0 (0%)
LM(Lying-Motivated)	10 (100%)	0 (0%)
LU(Lying-Unmotivated)	10 (100%)	0 (0%)

For the two Lying groups (LM and LU), the mean number of correct identifications of the individual lie items by Experimenter B was computed. The mean for the LU group was 7.1 out of 9, or 79%. The mean for the LM group was 7.9 out of 9, or 88%. Although the LM group mean was higher than the LU group mean, a *t*-test indicated the difference was not significant. As explained above, of the nine individual lie items for each Lying RP, three were control lie questions based on the events in the first session and six were questions from the preemployment Data Sheet. The number of correct identifications of individual lie items by Experimenter B above was subsequently divided into control lie question identifications and Preemployment Data Sheet lie question identifications. The mean number of correct control lie question identifications was 3 out of 3, or 100% for both Lying groups. The mean number of correct Preemployment Data Sheet lie question identifications for the LU group was 4.1 out of 6, or 68%; the LM group mean was 4.9 out of 6, or 82%. Again a *t*-test showed no significant differences between the means 4.1 and 4.9. Table 2 depicts the accuracy of subjective ratings of various types of lie items.

Objective Measures

The four physiological variables (SRL, SRR, respiration rate, and heart rate) were analyzed via change scores as suggested by Huck and

Table 2

Accuracy of Subjective Ratings of Individual Lie Items

Type of Items	Group	Hits	Misses(false-positives)
All Items	LU	71 (79%)	19 (21%)
	LM	79 (88%)	11 (12%)
Control Lie Items	LU	30 (100%)	0 (0%)
	LM	30 (100%)	0 (0%)
Preemployment Data Sheet Lie Items	LU	41 (68%)	19 (32%)
	LM	49 (82%)	11 (18%)

McLean (1975). As stated above, each RP had nine potential lie questions identified in the first session; three were questions based on the first session and six were questions from the Preemployment Data Sheet. Analysis of responses to these two types of potential lie questions showed they were not different, so they were combined in the subsequent analyses of objective measures. For each RP, nine other questions from the Preemployment Polygraph Examination were randomly selected as truthful validity questions to be compared to the potential lie questions. Change scores were computed for each of these two types of questions on each physiological variable by subtracting the scores on the nearest irrelevant question from the scores on the potential lie question or truthful validity question. A table of mean change scores is included in Table 3. A multivariate analysis of variance (MANOCA) [Groups (Lying or Truthful) by Motivation (Motivated or Unmotivated) by Items (potential lie questions or truthful validity questions)] with repeated measures on one factor (Items) was then performed on the change scores. The MANOVA yielded significant main effects for Groups ($p < .05$) and Items ($p < .05$), and significant interactions for Groups by Motivation ($p < .05$) and Motivation by Items ($p < .01$). In addition, the Groups by Items interaction closely approached significance ($p = .56$) and will also be discussed since a priori it was viewed as the most important effect to be analyzed. Individual univariate analyses of variance (ANOVA) [Groups (Lying or Truthful) by Motivation (Motivated or Unmotivated) by Items (potential lie questions or truthful validity questions)] with repeated measures on one factor (Items) were then performed on the change scores for each of the four physiological variables.

The ANOVA performed on the SRL variable yielded significant main effects for Groups ($p < .01$) and Items ($p < .01$) which are clarified by a significant Groups by Items Interaction ($p < .05$). The groups by Items interaction, collapsed across Motivation, was graphed and was found to be ordinal. Cell means were then subjected to the Newman-Keuls test. Results indicated that SRL increased significantly ($p = .01$) when Lying RPs were responding (untruthfully) to potential lie questions ($X = 5.80$), as compared to when Lying RPs were responding (truthfully) to truthful validity questions ($X = -1.38$) or when Truthful RPs were responding (truthfully) to either potential lie questions ($X = -1.14$) or truthful validity questions ($X = -1.99$). Thus, lying was accompanied by a significant increase in basal levels of conductance.

The ANOVA performed on the SRR variable indicated a significant Motivation by Items interaction ($p < .05$). Examining showed the interaction to be disordinal. Motivated RPs showed decreases in SRR when answering potential lie questions ($X = -.0115$) and increases when answering truthful validity questions ($X = .2055$); on the other hand, Unmotivated RPs showed increases in SRR when answering potential lie questions ($X = .1845$) and decreases when answering truthful validity questions ($X = -.116$).

The respiration rate ANOVA yielded two significant interactions, Groups by Motivation ($P < .05$) and Motivation by Items ($p < .05$). Both were disordinal. For the Groups by Motivation interaction, Truthful RPs showed increases in respiration rate when Motivated ($X = .4995$) and decreases when Unmotivated ($X = -.592$); Lying RPs showed decreases in respiration rate when Motivated ($X = -.475$) and Unmotivated ($X = -.133$) with larger decreases accompanying Motivated responses. For the Motivation by

Table 3
Mean Change Scores for Objective Measures

Truthful

	Motivated		Unmotivated	
Measure*	Potential Lie Questions	Truthful Validity Questions	Potential Lie Questions	Truthful Validity Questions
SRL	- .055	- .073	- .059	- .126
SRR	- .055	- .034	.046	- .077
RR	.133	.866	.033	-1.217
HR	.533	.600	- .134	- .734

Lying

	Motivated		Unmotivated	
Measure*	Potential Lie Questions	Truthful Validity Questions	Potential Lie Questions	Truthful Validity Questions
SRL	.324	- .082	.256	- .056
SRR	.032	.445	.323	- .155
RR	- .549	- .401	.051	- .317
HR	-2.133	- .535	- .999	.134

*SRL = Skin Resistance Level; SRR = Skin Resistance Response; RR = Respiration Rate, and HR = Heart Rate.

Items interaction, Unmotivated RPs showed increases in respiration rate when answering the potential lie questions (X = .042) and decreases when answering truthful validity questions (X = -.767); in contrast, Motivated RPs decreased respiration rate when answering potential lie questions (X = -.208) and increased when answering truthful validity questions (X = .2325).

The ANOVA performed on the heart rate variable indicated a significant main effect for Groups ($p < .05$) clarified by significant interactions for Groups by Motivation ($p < .05$) and Groups by Items ($p < .05$), both of which were disordinal. When Unmotivated, both Lying and Truthful RPs showed decreases in heart rate (X = -.4325, X = - .434, respectively); however, when Motivated, Lying RPs decreased in heart rate (X = -1.334) while Truthful RPs increased in heart rate (X = .5665). The significant Groups by Items interaction indicated that both Truthful and Lying RPs showed small decreases in heart rate when answering Truthful validity questions (X = -.067, X = -.2005, respectively); when answering potential lie questions, Truthful RPs showed increases in heart rate (X = .1995) while Lying RPs showed larger decreases (X - 1.566) then with truthful validity questions.

In summary, in all physiological change score analyses, lying responses yielded significant increases in conductance for SRL and larger decreases in heart rate as compared to truthful responses; motivation had no overall effect but interacted with other variables (Groups and Items) on several variables (SRR, respiration rate, and heart rate).

Discussion

The present study found that the Preemployment Polygraph Examination's validity was accurate in an analog situation; that is, the subjective ratings of whether the respondent was Lying or Truthful agreed perfectly with actual classifications of Lying or Truthful. Estimates of validity cited in criminal investigations (Lee, 1953; Marston, 1938; Summers, 1939) are based on subjective classifications of Guilty or Innocent; the parallel in the job screening situation would be subjective ratings of Lying or Truthful. This 100% validity yielded no false-positives, quite different from the 68% figure posited by Lykken (1974). Individual items on which RPs were lying were not identified as well, with estimates of validity being 79% and 88% for the LU and LM groups respectively. When the lie items were divided into control questions and Preemployment Data Sheet questions, validities were 100% and 68% or 82% respectively. Several factors could account for these varying validities. The overall Lying or Truthful ratings were based on the entire polygraph record, much more data than used when identifying individual lie items. Classification of each Preemployment Data Sheet question as Lying or Truthful was based on, at the most, responses to two questions -- the original question and possibly a rephrased statement of the original question inserted in the following series. As Abrams (1973) points out, limiting the amount of testing time in the laboratory setting often serves to reduce validity and this could account for the drop in validity when present ratings were based on small amounts of data. The three control questions were all either answered truthfully or deceptively, and all RPs who were lying were lying on these questions. So the 100% validity reported for these questions results from identifications based on three or six questions, as

well as the chart as a whole. When the time factor is considered, these differences in obtained validity would be expected. Two other points of difference between control and Preemployment Data Sheet questions should be noted, too, since they may have also contributed to the differences in validity between the two types of questions. First, the control questions may have been less ambiguous or confusing than the Data Sheet questions because they concerned one specific event (e.g., "Did Experimenter A give you a cup of water in the first session?") while Data Sheet questions were often more ambiguous or general (e.g., "Have you ever stolen merchandise or materials from a place where you have worked?"), and precise answers may not have been as easily decided upon. The second factor which may have influenced identification of lying items involved Experimenter's absolute knowledge about the truthful answers. Experimenter A was sure of the truthful answers to the control questions chosen as three potential lie items while he was only accepting the RP's word on the truthfulness of Preemployment Data Sheet answers. It is feasible that RPs might have been lying initially to some questions later chosen as potential lie items and would therefore have been actually telling the truth when they subsequently gave the opposite answers during the Preemployment Polygraph Examination. All these factors could have accounted for differences in the rates of control and Preemployment Data Sheet lie item identifications. Even so, overall subjective ratings of Lying or Truthful at 100% remain impressively high.

More important from both a theoretical and an applied point of view, however, are the significant differences found on the objective physiological variables between lying and truthful responses. This indicates physiological changes are occurring during lying and that the polygraph can be used to validly detect these changes in the preemployment examination situation. Lying responses were characterized by increases in conductance levels and larger decreases in heart rate, while truthful responses were accompanied by decreases in conductance and increases or slight decreases in heart rate. These differences between lying and truthful responses point to the usefulness of the polygraph as a deception detection instrument in this analog situation.

The galvanic skin response is one of the most commonly monitored physiological variables in deception. Several authors have noted increases in conductance under lying conditions (Barland & Raskin, 1975; Ellson, Davis, Saltzman, & Burke, 1952; Geldrich, 1941, 1942; Kugelmass & Lieblich, 1966; MacNitt, 1942; Summers, 1939; Thackray & Orne, 1968) in situations other than job screening. The present results indicate that SRL is also a useful detector of deception in the analog job screening situation. The other electrodermal measure, SRR, however, showed no significant changes as a function of lying. Kilpatrick (1972) suggested that phasic electrodermal activity or SRR is indicative of emotional arousal while the tonic level of SRL reflects cognitive activity. In the present study, lying can thus be seen as a cognitive activity as opposed to an emotional one, affecting SRL and not SRR. SRR by definition measures small changes from baseline; however, in deception, changes are often much greater (hence, the significant SRL increase), so the variable of SRR may be too sensitive or indicative of emotional rather than cognitive activity.

Heart rate has received relatively little attention in laboratory or field studies of deception (Orne, et al., 1972) with relative blood

pressure being the typical cardiovascular measure instead. However, in one study by Cutrow, Parks, Lucas, and Thomas (1972), heart rate was measured and quantified. Although some of the individuals in that study had increases in heart rate when lying, others showed decreases as found in the present study. There are two possible explanations of why heart rate presently decreased more during deception. First, the potential lie questions requiring lying responses may have evoked primarily orienting responses with the concomitant deceleration of heart rate noted by several authors (e.g., Graham & Clifton, 1966; Hare, 1973; Hard, Wood, Britain, & Shadman, 1971). Another explanation could be that heart rate is one of the most easily controlled physiological responses (e.g., Blanchard, Scott, Young & Edmundson, 1974; Engel & Hansen, 1966; Frazier, 1966; Ray & Lamb, 1974). RPs knew that heart rate was one of the variables being monitored and may have been attempting to voluntarily control it when lying, resulting in the observed decelerations when lying.

The final physiological measure, respiration rate, showed no overall significant differences between lying and truth response. In quantifying respiration, a rate of cycles/minute is used. In discerning deception, however, other changes such as increasing baselines or shakiness in the tracing are also indicative of deception. These types of changes are not included in rate quantification of respiration. This may explain why no overall differences between lying and truthtelling were found for respiration rate.

The present study found no overall significant effects for motivation in detecting deception. Subjective ratings and item identifications tended to be better when RPs were motivated, but the differences were not significant. For the objective measures, no main motivation effect was found, but motivation did interact disordinally with the other independent variables (Groups and Items) on SRR, respiration rate, and heart rate. In general, changing the motivation factor resulted in changes in the direction of change score values on the other interacting variable; increases became decreases and vice versa, typically. The effects of motivation are far from clear in the present study. No overall main effect was found, but the four interactions on three variable, even though disordinal, indicate that motivation apparently has some effect, albeit unclear. The $25 rewards offered to RPs is obviously not the same as getting a job or escaping punishment from a crime, and it is possible that it simply was not sufficient to serve as a powerful motivating factor. In fact, two motivated RPs mentioned that they thought the $25 reward was "silly". A more appropriate incentive might yield a clearer motivation effect, but further research must determine this.

In summary, the Preemployment Polygraph Examination proved to be valid both subjectively and objectively in an analog job screening situation. This research is the first investigation of the Preemployment Polygraph Examination, and, of course, many questions remain. Future investigations will hopefully touch on moral or ethical issues ignored here as well as procedural and methodological considerations.

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PURPOSEFUL NON-COOPERATION: A DIAGNOSTIC OPINION OF DECEPTION

By

Brian Jayne

INTRODUCTION

Experienced polygraph examiners have long postulated that a diagnostic relationship exists between deception and a general category of observable polygraph responses commonly termed purposeful non-cooperation. As early as 1945 Reid discussed in publication a phenomenon herein referred to as purposeful non-cooperation. One study found that 90% of deceptive subjects on specific issue examinations engaged in some form of purposeful distortions. (Magiera, 1975) The correlation of purposeful non-cooperation to deception however, has never been statistically analyzed.

This study is divided into two phases. The first phase is to evaluate whether or not acts of purposeful non-cooperation on the part of a polygraph subject are a valid indication of deception. The second phase attempts to identify and correlate general patterns of purposeful non-cooperation within the polygraph technique. For the purpose of this study purposeful non-cooperation (PNC) is defined as, "A voluntary and conscious effort on the part of a polygraph subject to affect the results of a polygraph examination through artificially distorting, or interfering with their polygraph recordings."

TYPES OF PURPOSEFUL NON-COOPERATION

There are numerous techniques (countermeasures) available to a subject who desires to attempt to deceive the polygraph examiner or thwart detection of deception. (Law, 1978) This study evaluates two types of PNC which share a common trait; they are observable on the polygraph recordings, or evident during the examinations. These are:

1. Distorting or affecting the normal recording of physiological systems (blood pressure, respiration, and electrodermal responses)

2. Failure to follow the examiner's test instructions.

Excluded from this study were countermeasures involving drugs, alcohol, medications, psychological evasion, hypnosis, yogi, transcendental meditation and bio-feedback.

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METHOD

A random selection of 150 polygraph records, where PNC was identified by the opinion of the conducting examiner, were used in this study. No attempt was made to verify whether or not PNC actually existed; the record was included if the original examiner's opinion indicated the presence of PNC. The polygraph records were then evaluated in terms of the types of PNC and patterns of PNC.

ACKNOWLEDGEMENTS

The author is indebted to Stanley Slowik, Director of John E. Reid and Associates' Denver Office for his assistance in presenting this study and Dr. Norman Loomer, Ph.D., Assistant Professor of Mathematics at Ripon College for his expertise and effort in calculating the statistical data.

PROCEDURE

During the original examinations from which the charts analyzed were selected, the following techniques and procedures were used:

1. All examiners utilized the Reid Control Question Technique and were consistent in their test instructions.

2. A stimulation card test was administered to all subjects.

3. Warnings regarding cooperation were given to subjects who appeared to be engaging in acts of PNC.

4. A Yes Test was conducted if any indications of PNC were suspected on previous charts.

The Reid Control Question Technique consists of a non-accusatory pre-test interview during which the Relevant Questions (dealing with the issue under investigation), and the Control Questions (dealing with an act of wrongdoing of the same general nature as the issue under investigation, however, to which the subject in all probability will lie, or to which his answer will be of dubious validity in his own mind) are formulated and reviewed with the subject. (Reid and Inbau, 1977) Irrelevant questions are also included in the technique but are not asked for specific comparison purposes. Following the pre-test interview a series of three to five polygraph charts, containing the same relevant, control and irrelevant questions, are conducted. Following the completion of the polygraph recordings, the examiner interprets the polygraph charts and renders an opinion of truth or deception based on the subject's psychphysiological responses to the relevant and control questions.

If, during the course of the chart recordings, the subject is, or appears to be, engaging in acts of PNC, the examiner will give a verbal warning to the subject: "Are you doing anything today to try to help the polygraph?", or more directly, "It is important that I have your full cooperation today, just allow your body to respond normally." If the subject does not follow the examiner's test instructions, generally the test is stopped and the subject is re-instructed. Warnings are usually given prior to the second or third control question test; they are never given prior to the stimulation or Yes Test.

THE STIMULATION CARD TEST

The benefits of a stimulation test in terms of producing more conclusive and accurate polygraph results was demonstrated in 1975 by Senese. The possibility of the stimulation test sharing the quality of eliciting PNC was mentioned by Barland in 1978. The instructions given to the subjects in this study for the Card Test were: "This next test is a standardization test I conduct on all subjects. I want you to select a card from this deck and look at the number. What I'm going to do is simply call off the cards in this deck asking if you selected each card I call out. I want you to say 'No' to each card I call out including the number that you just picked. By doing that I will have a comparison response of what it looks like when you do, and do not tell the truth. Now I am asking you to lie to me on this next test so simply say 'No' to each card I call out."

THE YES TEST

The Yes Test is specifically designed to invite the deceptive subject to engage in acts of PNC. (Reid and Inbau, 1977) The Yes Test does not include the control questions, allowing the examiner to better determine whether or not previous acts of PNC were the result of deception to the relevant questions or concern over the control questions. The instructions for a Yes Test are: "This next test will be a little different. I am going to drop these two questions (read the control questions) but I will ask all of the other questions that were on the other tests. The thing that will be different about this next test is that I want you to answer 'Yes' to all of the questions, even the ones you answered 'No' to before. The reason that I run a test like this is that I have recorded what it looks like when you answer 'No' to some of the questions and I just want to see if there is any change in your response when you answer 'Yes'. Now remember, answer 'Yes' to each question I ask." This test can be given in the negative application also (for victims, witnesses, etc.) however the irrelevant questions must be changed to make them known lies.

EVALUATION OF VALIDITY

Some field studies analyzing the validity or reliability of the polygraph technique utilize cases which are verified. That is, the polygraph records selected for those studies represent cases in which the truthfulness of the subject's answers to the questions had been verified through a corroborated confession. (Horvath & Reid, 1971) It is a variation of this approach which was selected for evaluating validity in this study.

To investigate if PNC is a valid indication of deception, the random cases selected in this study were divided into two categories; those cases in which the examiner was not allowed to interrogate the subject, and secondly, cases in which the subject was interrogated following the examination. From this second category a percentage confession rate was calculated to determine, through confessions, how many of the non-cooperative subjects were in fact deceptive. (See Table 1)

EVALUATION OF PATTERNS OF PURPOSEFUL NON-COOPERATION

Two patterns of PNC were evaluated in this study. The first analyzed

DATA TABLE 1
NON-COOPERATIVE SUBJECT

Total Sample	Not Interrogated	Interrogated	Confessed	% Confessed
150	40	110	96	87.3

the pattern of selecting certain questions in which to engage in acts of PNC. (See Table 2) Secondly, patterns were evaluated to determine whether or not the types of PNC selected by the subject remained consistent throughout the examination. The frequency of selecting a given parameter in which to engage in PNC is indicated in Table 3.

TABLE 2
EVALUATION OF PATTERNS OF PNC ON CARD & YES TESTS

Card Test

Pattern	%
PNC only on card selected	5.5
PNC on card other than selected	10.6
PNC throughout	23.3
No PNC	10.1

Yes Test

Pattern	%
PNC only on R question	62.2
PNC only on I question	13.2
PNC throughout	23.6
No PNC on Yes Test	1.3

TABLE 3
EVALUATION OF PARAMETERS OF PNC OBSERVED

Card Test

Parameters	%
Respiration	46
Cardiovascular	26
Failure to follow instructions	25
GSR	6

Yes Test

Parameters	%
Respiration	78
Cardiovascular	31
Failure to follow instructions	28
GSR	7

FINDINGS

One hundred and ten of the 150 subjects where charts were evaluated in this study were interrogated following the examination, and 96 confessed (87.3%). At a 95% confidence interval using the normal approximation to the bionomial distribution formula, the range of accuracy of rendering a deceptive opinion on subjects who engage in acts of PNC is 81.0% - 93.5%.

FINDINGS (PATTERNS OF PNC)

Of the 150 subjects included in this study, 17.3% engaged in acts of PNC throughout the examination (generally the respiration parameter), and 82.6% engaged in acts of PNC only on portions of the examination. The

majority of the subjects in this study (82.6%) selected a pattern of PNC on the stimulation and/or Yes test. In 89.9% of the cases evaluated, the subjects engaged in acts of PNC during the stimulation test. In 10.1% of the cases, the subjects cooperated on the stimulation test and engaged in acts of the PNC at some point following, or prior to the stimulation test. During the Yes Test 98.6% of the subjects engaged in acts of PNC. In terms of consistency, 84.6% of the subjects maintained the same type of PNC between the stimulation and the Yes Test, while 15.3% of the subjects changed the type of PNC they selected on the stimulation test to a second and not previously observed form of PNC by the time the Yes Test was administered. This change might have been due to warnings given the subject following the stimulation test.

DISCUSSION (VALIDITY)

The process of validating PNC as a diagnostic criteria of deception is not an easy task methodologically speaking. A mock crime paradigm is inappropriate since not all deceptive subjects engage in acts of PNC. Similarly, studies have been conducted in which deceptive subjects were instructed to try to 'beat' the polygraph through controlled responses. (Dawson, 1980) This approach only evaluates the effect of countermeasures on the accuracy of the polygraph technique, and in no way reflects on the correlation of PNC with deception. The method selected in this study to evaluate the validity of PNC as a diagnostic criteria of deception definitely yields a minimal accuracy range since the calculation assumed that any subject who did not confess was telling the truth. Despite this shortcoming, the presented statistics indicate an impressively high level of accuracy of rendering a deceptive opinion on non-cooperative subjects.

DISCUSSION (PATTERNS OF PNC)

Reviewing the frequency of PNC occuring on the stimulation test to the card selected and the frequency of PNC occuring on the relevant questions during the Yes Test, it appears that most non-cooperative subjects believe the examiner's instructions when they are told that their response to the card selected will be used as a comparison response. It also appears that the subjects believe that the Yes Test is conducted to determine whether or not the responses change on the polygraph when the subject answers 'Yes' to the relevant questions. In this study the respiration parameters were the most frequently affected by the non-cooperative subject while distorting the GSR pattern by movement of the hand or fingers to alter the electrodes was the least common form of PNC observed. Magiera found that of the 20 deceptive subjects examined on a single issue test, that 70% engaged in PNC through muscular distortions and that 65% selected the respiration parameter. Magiera's findings cannot be considered inconsistent with the findings of this study since Magiera utilized a muscle movement recorder to detect unobserved muscle contractions which may, or may not appear in the cardiovascular parameter.

It is of interest to note that of the four divisions of PNC analyzed, only the respiration parameter increased with statistical significance between the stimulation and Yes Tests. A possible explanation for this observation is that the respiration parameter is the 'easiest' to affect without noticable movement, whereas the other divisions of PNC are more perceptable to the subject and examiner particularly once a warning has been given.

ILLUSTRATIONS OF PURPOSEFUL NON-COOPERATION AFFECTING RECORDED PHYSIOLOGY

Some forms of non-cooperation affecting recorded physiology are hyperventilation, controlled breathing, false blood pressure responses via induced muscle tension, and movement of the fingers or hand upon which the GSR electrodes are placed. Also included in this category would be false responses resulting from sensory stimulation (biting tongue, stepping on a concealed tack, contraction of the anal sphincter muscles) and feigned respiratory or cardiovascular symptoms (cough, sniff, inability to withstand pressure in the blood pressure cuff).

CHART A

Chart 'A' is a deceptive subject suspected of stealing $1950 from company deposits. During his stimulation test (chart indicated) the subject moved his left hand each time the chosen card (8) was asked (indicated by MLH). Following the stimulation test, this subject hyperventilated throughout the remainder of the examination. This subject ultimately confessed to stealing the deposit money to help pay bail for a friend who was in jail.

CHART B

This deceptive subject's Yes Test (chart 'B') illustrates PNC by regulating respiratory responses on relevant questions #3 (Since (date) did you steal any deposits from Company?) and #5 (Did you steal those missing deposits?). Relevant questions #8 (Did you steal about $3200 in money from Company?) and #9 (On Date, did you steal $1100 in money from Company?), do not contain the same form of affected respiration, however on #9 the subject does move his left hand affecting the GSR recording. This subject also engaged in a form of failure to follow instructions by delaying his answer to #5 (indicated by DEL). Following the examination this subject confessed to stealing the $3200.

CHART C

Chart 'C' illustrates what is commonly termed 'speed breathing' or abnormally rapid respiration on relevant questions #5 (Did Girl put her mouth on your penis?) and #8 (On Date, did you bare penis touch Girl's vagina?). This subject also regulated his respiration on irrelevant question #1 (Do some people call you Name?) and #4 (Are you in Milwaukee right now?) Following the examination this subject confessed to sexually assaulting his step-daughter.

PURPOSEFUL NON-COOPERATION AS DEFINED AS A FAILURE TO FOLLOW INSTRUCTIONS

Failure to follow instructions can be the product of psychological evasion (a mental or cognitive activity on the part of a subject for the purpose of concealing deceptive responses), or merely a separate category of PNC. Some typical examples under this heading are delayed answers, early answers, answering questions with more than a 'yes' or 'no' response, or simply not sitting still in the polygraph chair. It is important to realize that none of the behavior associated with failure to follow instructions can be considered non-cooperative unless the examiner specifically instructed the subject on how to cooperate during the examination, and that the subject understands the examiner's instructions.

Purposeful Non-Cooperation

CHART A

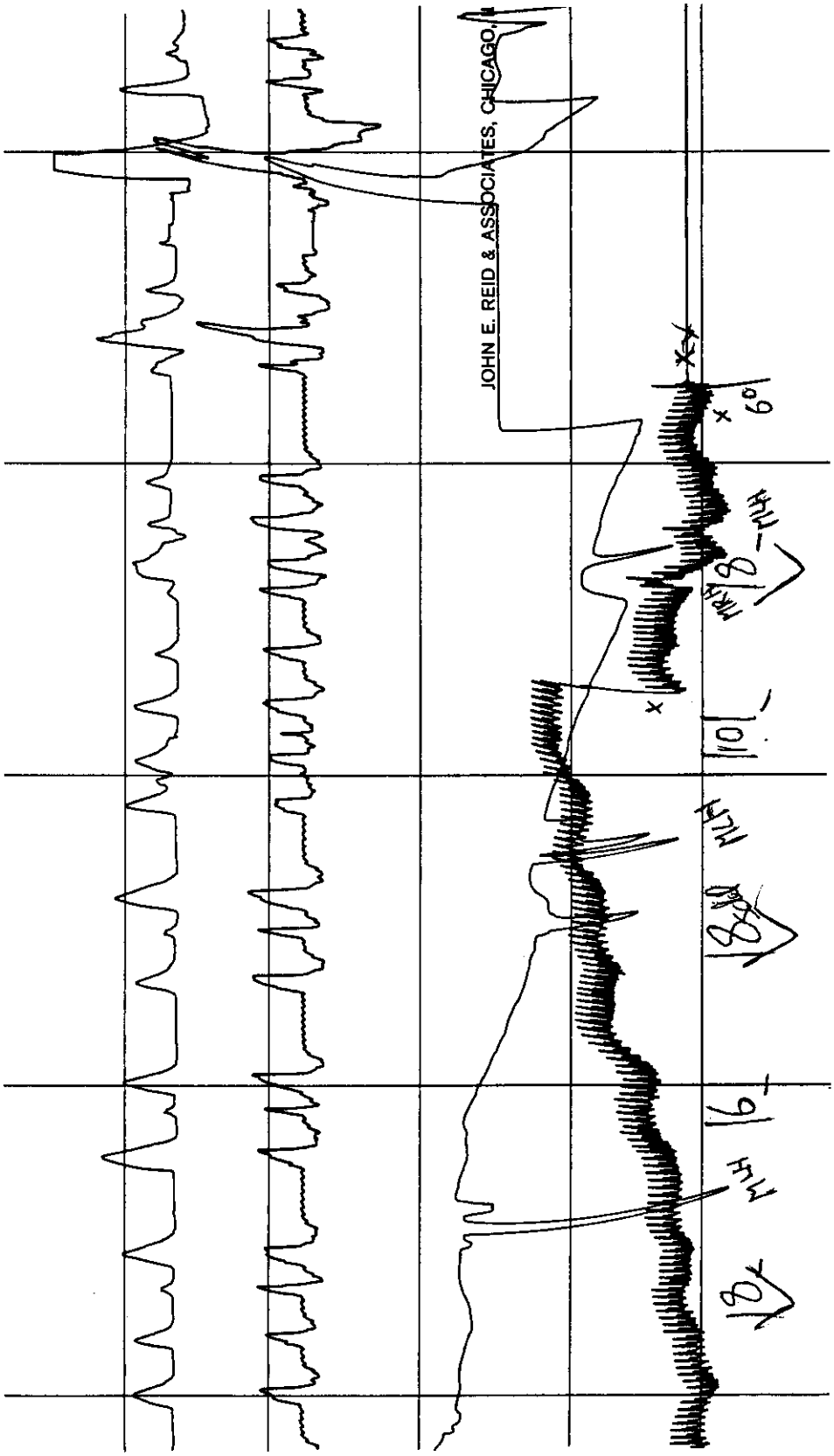


CHART B

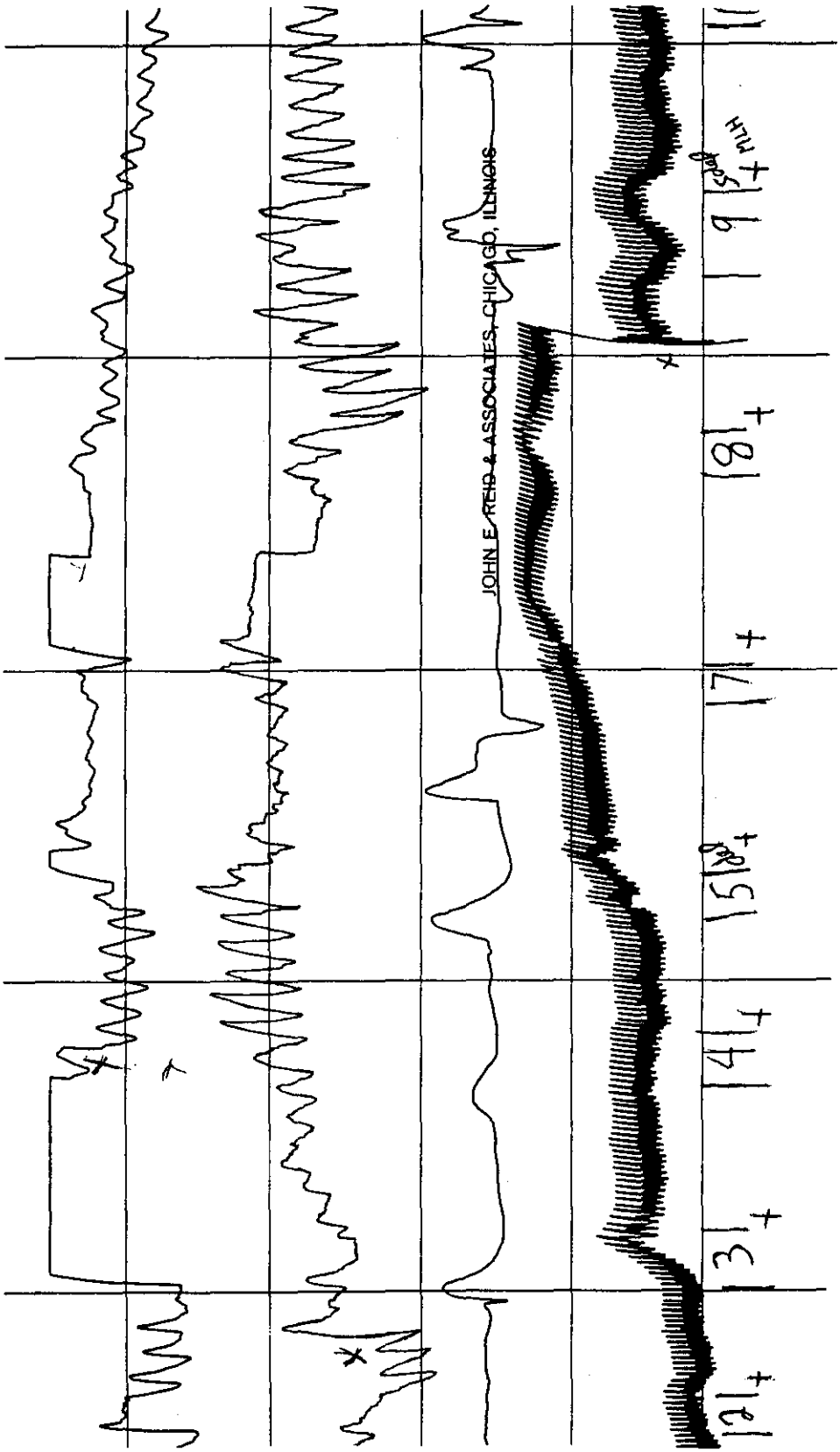


CHART C

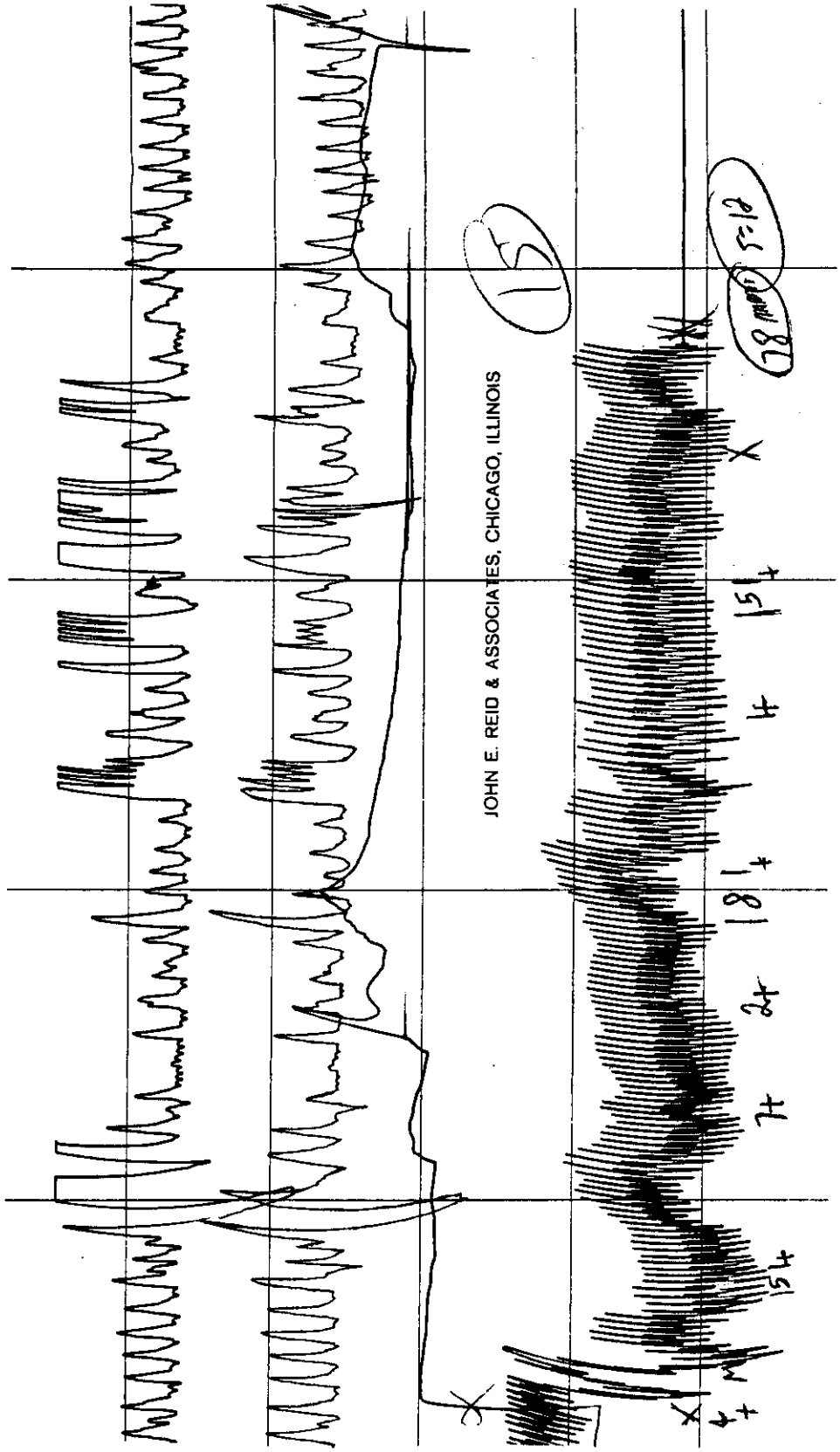


CHART D

Chart 'D' is a stimulation test from a private investigator suspected of stealing $826 in money from a hospital safe. The subject delays his answers, answers the card selected (16) incorrectly (yes, I mean no), and laughed following some of his answers. On this subject's Yes Test, the subject answered 'No' to the relevant questions after the test had been re-started twice, each time following explicit instructions to answer the question 'Yes'. This subject confessed to stealing the $826 after his examination.

DERIVATIONS OF PURPOSEFUL NON-COOPERATION

The findings in this study are not intended to imply that every polygraph subject who engages in apparent acts of PNC is deceptive to the issue under investigation. Recall that the sample in this study consists of cases in which the original examiner rendered an opinion of PNC, as opposed to a random selection of all subjects who engaged in acts of PNC. The derivation of PNC is an important consideration in evaluating polygraph records of the non-cooperative subject.

In a 1975 study conducted by Robbins and Penley none of the 140 verified truthful subjects analyzed made any attempt to distort their polygraph recordings. Realistically however, the examiner must consider the possibility of the truthful subject engaging in acts of PNC. Specifically the examiner should be concerned with non-cooperation resulting from the subject's deception to the control questions, hostility toward the examination, a medical or emotional complaint, or a sincere effort on the part of the subject to try to 'help' the polygraph indicate their truthfulness.

DECEPTION (CONCERN) TO THE CONTROL QUESTIONS

The format of the Yes Test permits the examiner to evaluate whether or not the subject's previously observed acts of PNC are possibly the result of concern over detection of deception to the control questions. The Yes Test does not include the control questions, and cooperation during the Yes Test combined with non-cooperation to the stimulation test or the irrelevant questions during the control question charts should serve as an indication that the PNC may be a result of concern to the control questions.

HOSTILITY OR ANGER

Anger toward the examination, the issue of the examination, or the polygraph technique may cause a truthful subject to provide minimal cooperation during the examination. The type of PNC most frequently associated with anger or hostility is failure to follow instructions. In this respect, a strong warning emphasizing the importance of full cooperation should be successful in obtaining truthful polygraph records from otherwise non-cooperative subjects. Feigned anger, on the other hand, may be considered a type of PNC if it is used to discontinue or disrupt the examination. The symptoms of anger should be familiar to all examiners, and it is important to note that not only may legitimate anger produce false deceptive criteria (Hunter, 1974), but non-cooperation as well.

CHART D

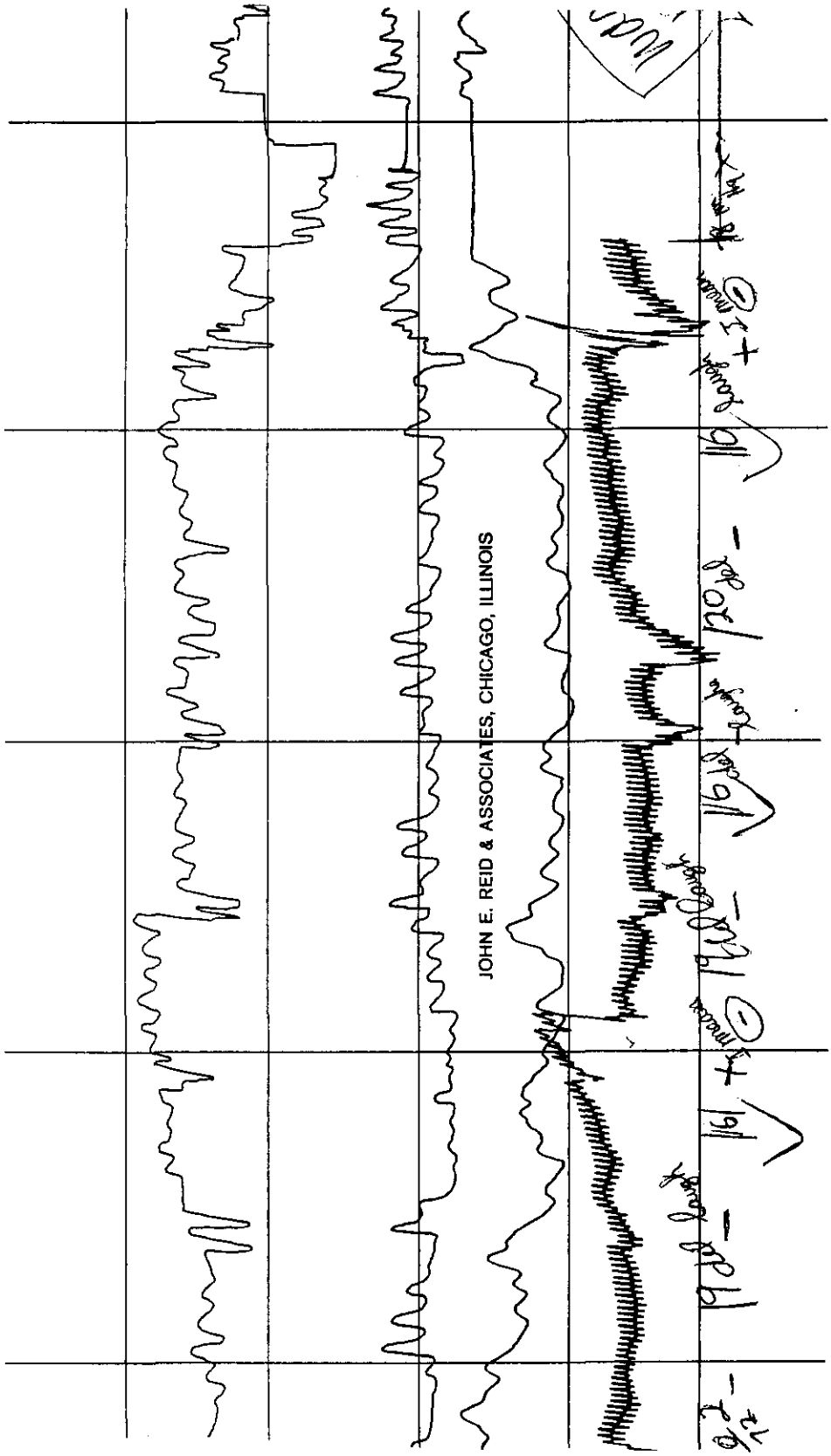


CHART E

This subject (Chart 'E'), accused of sexually assaulting a grade school girl, was angered at the allegations and gave minimal cooperation during his examination. On the Mixed Question Test (Reid & Inbau, 1977), the subject continued, even after warnings, to answer the questions with other than a 'yes' or 'no' response and did not answer the questions immediately after they were read, except #3 which is an early answer. This subject's examination was reported as inconclusive as the examiner suspected that the subject's non-cooperation was an attitude problem. The subject was given a re-examination a week later whereupon he gave his full cooperation and was reported truthful, resulting in dismissed charges.

MEDICAL OR EMOTIONAL DERIVATION

Distortions in polygraph recordings resulting from a medical or emotional condition will most likely take the form of distortions throughout the examination. Whether it be hyperventilation, failure to sit still in the chair, or sniffs and coughs during the examination, before the opinion of PNC can be rendered the examiner must be confident that the distortions created by these acts are not the product of a leigitimate medical or emotional condition. A reliable clue to diagnosing the possibility of PNC occuring due to a medical or emotional problem is whether or not the subject establishes and maintains a pattern of PNC. Sniffs or coughs occuring only during the relevant questions are not spontaneous; just as distorted respiration which occurs only when the blood pressure cuff is inflated and returns to 'normal' in between tests is usually not the result of a legitimate medical condition. Hyperventilation is perhaps the exception to this rule as some subjects with emotional problems (anxiety attacks) will hyperventilate to calm them down during the time the blood pressure cuff is inflated. A medical data sheet, completed by each subject prior to the examination can be very useful in evaluating a subject's physical or mental health. When health problems do surface during the examination, the examiner must consider the possibility that observed distortions are not, in fact, non-cooperation, but rather a natural result of a medical condition.

CHART F

The subject in Chart 'F' had been admitted to a hospital for psychological treatment on five occasions within the 12 months immediately prior to her examination. The subject's normal respiration was recorded between tests. However, after the test began, she engaged in obvious hyperventilation which included pursed lips during expiration. Following a warning regarding the hyperventilation this subject gave her full cooperation and was reported truthful on the examination (investigating the paternity of her illegitimate child). During a post-test interview, the subject stated that whenever she feels nervous, she hyperventilates to make her less nervous. Had the examiner not pursued this subject's statements regarding her emotional history during the pre-test interview an erroneous opinion of PNC may have been rendered.

HELPING THE EXAMINATION

The subject who is concerned about 'passing' the examination may engage in acts of PNC to their card selected during the stimulation test and

CHART E

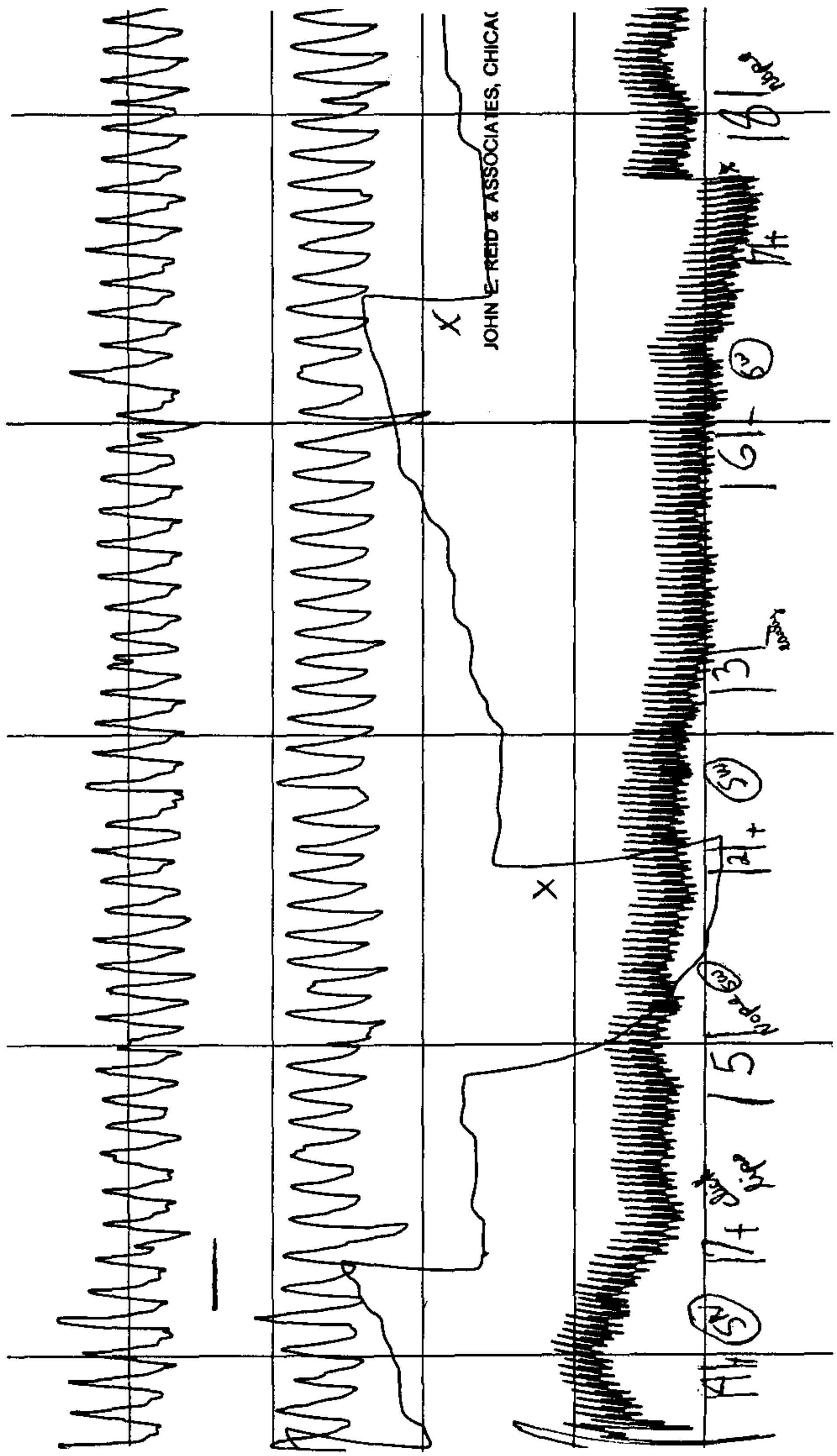
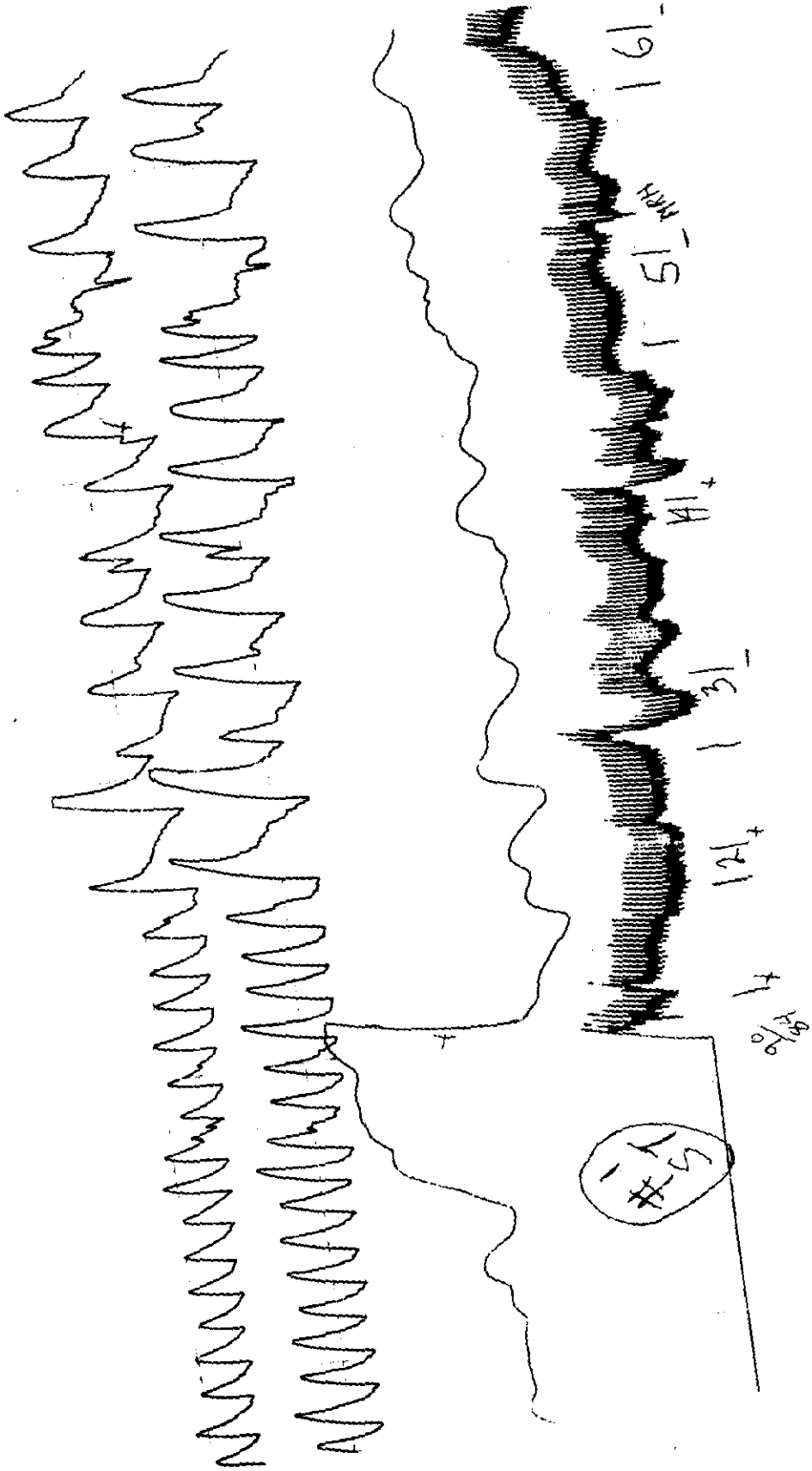


CHART F



may purposefully distort their response to the relevant questions during the Yes Test. Perhaps the saving grace with this derivation of PNC is the subject's willingness to admit that they did not cooperate during the examination when confronted with their non-cooperation following the test. When a subject admits not cooperating with the examionation, it is our policy to render an inconclusive opinion and schedule a re-examination. It has also been our experience that subjects who, during their interrogation, do not admit in engaging in acts of PNC are commonly verified deceptive.

CHART G

Chart 'G' is a verified truthful subject in a theft case. This subject engaged in acts of PNC on both her Card Test and the Yes Test. About ten seconds into this subject's interrogation, she broke down and cried, "I can't pass any test!" She then explained how she had helped the test by trying to show what she thought a lie looks like (her exaggerated responses on the Yes Test). This subject was scheduled for a re-examination and was thereafter reported as telling the truth, after she gave her full cooperation. Interestingly, the subject who ultimately confessed to the theft also engaged in PNC. However, he denied doing anything to affect his recordings even after his charts were shown to him during the interrogation.

INTERPRETING THE YES TEST

If a Yes Test is conducted and the subject does not engage in acts of PNC, the presence of genuine deceptive responses to the relevant questions should not be interpreted as indicative of truthfulness to the issue under investigation even if the subject is answering 'Yes' to the relevant questions. Studies investigating this phenomenon convincingly demonstrate that the subject's answer is not the stimulus which initiates an emotional response, but rather the question that is asked of the subject. (Horvath & Reid, 1972)

CHART H

This deceptive subject's Yes Test (Chart 'H') contains significant emotional responses in the respiration and GSR parameters on relevant questions #3 (On Date, did you start that fire inside of Company?) and #5 (Did you start Company on fire?) This subject complained of blood pressure cuff discomfort on earlier charts so the examiner reduced the pressure in the cuff on the Yes Test to be certain that the subject's earlier delays in his answers were not due to cuff discomfort. Even with the deflated cuff the subject continued to delay his answers to the irrelevant questions. Following the examination the subject confessed to 'accidentally' starting the fire. Had the examiner used the deceptive responses to the relevant questions on the Yes Test as an indication of truthfulness, the truth may never have been discovered.

SUMMARY AND CONCLUSIONS

Although some authors are skeptical of the diagnostic relationship between PNC and deception (Abrams, 1977, p147), the findings of this study clearly indicate that PNC is a valid indication of deception if properly

CHART G

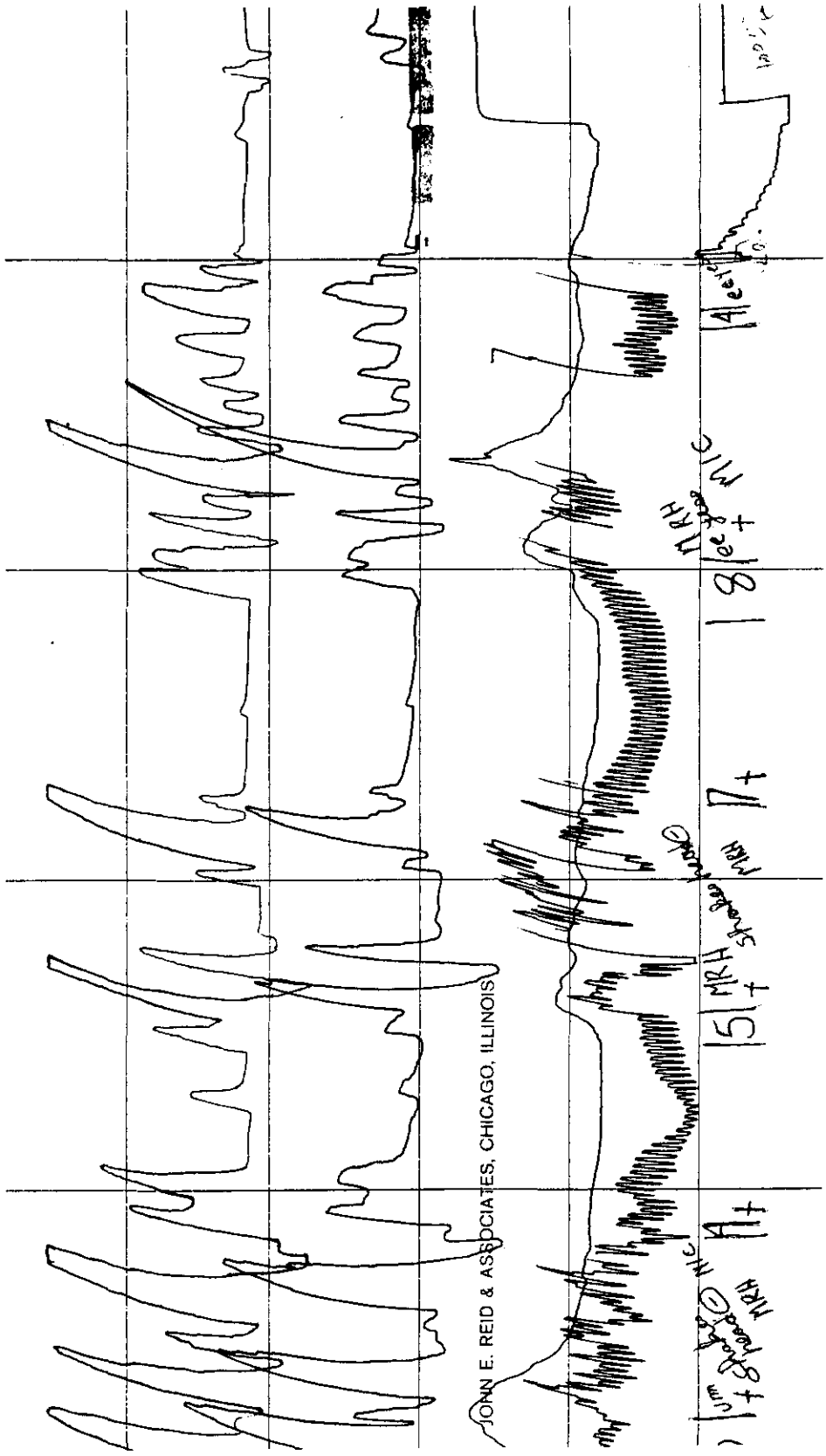
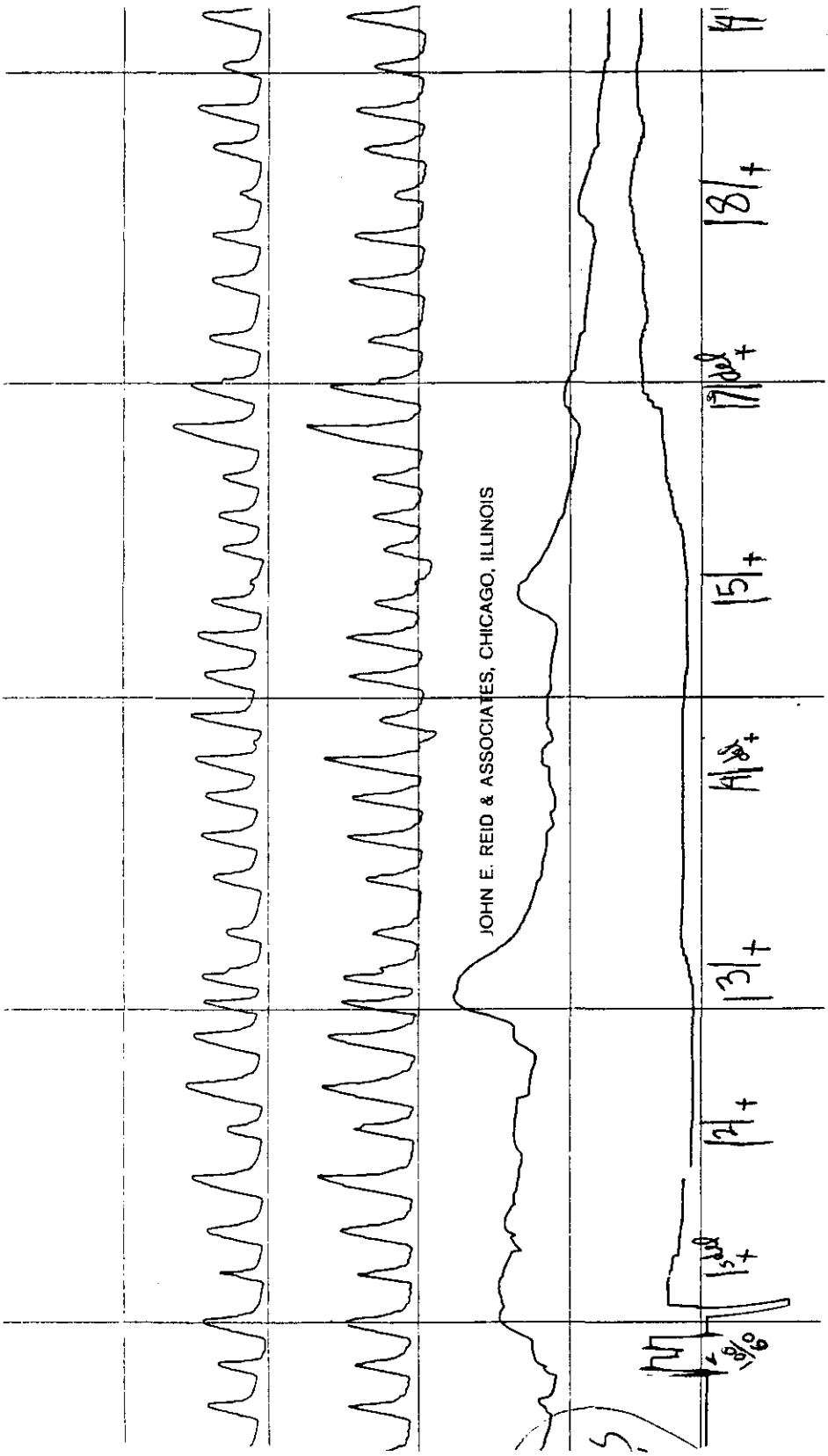


CHART H



diagnosed. In addition, there is evidence that properly diagnosed PNC often follows a pattern and is consistent between charts of the same subject. As the chart examples in this study illustrate, PNC is fairly easy to recognize, and should be considered during chart interpretation.

RESPIRATION

Because of the variety of possible voluntary and involuntary distortions appearing in the respiration parameters, erratic and inconsistent respiration patterns are perhaps the most difficult to interpret in terms of PNC. A medical or emotional condition should first be considered, but psychological evasion and deceptive PNC must also be suspected. If the examiner is unable to obtain a normal respiration pattern, whether it be between charts, or a test where only irrelevant questions are asked, and opinion of PNC is probably unwarranted, and the subject should be reported as inconclusive.

CONSISTENCY

The majority of subjects who engage in PNC select a pattern of PNC. Consistency in patterns or types of PNC between the stimulation and Yes Tests should be a strong indication of deception to the issue under investigation. The exception to this is the subject who is trying to help the polygraph.

FAILURE TO FOLLOW INSTRUCTIONS

When failure to follow instructions is evident, the examiner must be certain that the subject understands the instructions and is physically capable of following them. An example of the latter is a paternity subject who moved each time a question was asked during the chart recordings. After the first warning the subject informed the examiner that she was hard of hearing and naturally leaned toward a speaker when being asked a question. The examiner increased his volume and she produced truthful polygraph records.

RENDERING OPINIONS

Never report as truthful subjects who engage in acts of PNC on portions of the test or throughout the examination. At best, the examiner should render an inconclusive opinion. If PNC is evident on multiple issue examinations (pre-employment or periodic examinations) the opinion of the examiner should indicate deception to one or more of the issues under investigation, and not to all of the issues.

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THE FRIENDLY POLYGRAPHER CONCEPT AND ADMISSIBILITY

By

Jill Ishida and Charles M. Sevilla

Appellant submitted to a "Reid control question" polygraph examination conducted by a polygrapher employed by defense counsel. The test revealed that appellant was truthful when he said he did not rob the Kinney's Shoe Store, and did not commit an assault on the store employee. Appellant sought to introduce the results of the examination at trial. Although the court was satisfied that the test was properly conducted, it nevertheless denied appellant's motion to introduce the polygraph evidence based on the fact that the test was administered by a "friendly polygrapher."

At the motion for new trial, appellant submitted the affidavit of Dr. David Raskin. His research in this area found that the "friendly polygrapher" concept was without scientific merit. The affidavit was submitted with Raskin's resume to substantiate his acknowledged expertise in the field of polygraphy. Appellant also introduced into evidence Raskin's study, Validity and Reliability of Detection of Deception, which refutes the "friendly polygrapher" theory. The court denied appellant's motion for new trial.

Appellant contends that the court erroneously denied the admission of this evidence based on the "friendly polygrapher" theory as that concept is invalid. Thus, the case must be remanded to the trial court for a redetermination of the admissibility of the polygraph evidence without reliance upon the "friendly polygrapher" concept.

The theory was first propounded by Dr. Martin Orne, and was subsequently uncritically adopted by this court in People v. Adams (1975) 53 Cal.App.3d 109. The concept refers to a polygraph test administered by an examiner on a defendant at the behest of the defense attorney. Orne contends that because the examinee knows that the results of the test cannot be used against him in court, he does not fear detection. Inasmuch as the motivating factor of fear of detection augments a subject's psychological response and that response is an essential element in detecting deception, one cannot rely on the results of a polygraph test where that motivating factor is absent. (Orne, M.T. Implications of Laboratory Research for the Detection of Deception In Legal Admissiblity of the Polygraph, Ansley, N.(ed.) Charles C. Thomas, 1975, pp. 114-116. Adams adopted this theory and held inadmissible a polygraph examination which was administered by a "friendly polygrapher." (People v. Adams, supra, 53 Cal.App.3d 109, 118.)

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In assessing the validity of the "friendly polygrapher" concept, it is noteworthy that Orne cites no research to support his theory. The only research available on this subject is by Dr. David Raskin, Dr. Gordon Barland and Dr. John A. Podlesny. (Raskin, Barland and Podlesny, Validity and Reliability of Detection of Deception, National Institute of Law Enforcement and Criminal Law Enforcement Assistance Administration, U.S. Department of Justice (1978), [hereinafter referred to as Raskin study].) The Raskin study sought to test the "friendly polygrapher" hypothesis. That hypothesis predicts that exams conducted confidentially for defense attorneys would produce more truthful appearing polygraph charts than those performed where the examinee knew that the results would be reported to law enforcement authorities.[1]

Three sample groups were tested. Approximately one-half of the subjects in each group were given a confidential examination for defense use, the other subjects were examined with the knowledge that the findings would be reported to law enforcement or their employers. The results of the experiment demonstrated that contrary to the "friendly polygrapher" hypothesis, there was no difference in the frequency or truthful outcomes for defense and law enforcement examinations. Moreover, the data of one sample group produced statistically significant results indicating that the law enforcement tests produced more truthful outcomes. This is totally contrary to Orne's speculations. (Raskin study, supra, at pp. 6, 21.)

Raskin's findings are consistent with the polygraph theory underlying the control question technique. Under this technique, the examiner compares the subject's responses to the control and relevant questions to determine whether the examinee is practicing deception.[2] If the response of the control questions are greater than those to the relevant questions, the inference is that the examinee is telling the truth on the relevant questions. (J. Reid and F. Inbau, Truth and Deception, 1977, pp. 13-63.) Lack of response due to lack of motivation renders the test inconclusive, not conclusively truthful as Orne asserts. (Tarlow, "Admissibility of Polygraph Evidence in 1975; An Aid in Determining Credibility in a Perjury-Plagued System." 1975, 26 Hastings L J 917, 195; see also Reid and Inbau. supra, at pp. 215-216.) Thus, even if a subject lacks fear of detection, his polygraph test results will not be erroneous but merely read inconclusive.

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1. Truthful decisions in this context means polygraph charts which read that the examinee is telling the truth. It does not mean polygraph charts which correctly determined whether the subject was lying or telling the truth.

2. "A 'control question' is a known-lie or probable-lie question used for multiple purposes. The examiner expects to see a reaction on these questions. This insures that the subject is capable of responding and provides a basis for comparing the level of reaction on the control qeustions to the relevants. An example of a 'control question' is: 'Between the ages of 10 to 18, did you ever take something that did not belong to you?' A 'relevant question' is a question on the target issue for which the examination is being conducted (for example, 'On _____(date), did you rob the First National Bank?')" "Sevilla, "Reliability of Polygraph Examinations. (1977) Am. Jur. Proof of Facts, 2d series, vol. 14, p. 12, Comment, fn. 15.)

Raskin's study demonstrates that the examinee of a "friendly polygrapher" is very motivated to produce conclusive results. Orne, himself, has determined through research that subtle motivational factors affect the rate of detection. (Gustafson and Orne, "Effects of Perceived Role and Role Success of Detection and Deception." J. Applied Psychology 49(1965): 412, 417.) In one study, college students were asked to attempt to deceive the polygraph examiner [hereinafter referred to as test group.] They were further told that only people of superior intelligence and great emotional control succeed in such a task. A dollar bonus was also offered as an incentive to deceive. A second group tested was not told this information [hereinafter referred to as control group.]

The findings showed that the students in the test group were more readily discovered in their deception. (Gustafson and Orne, "Effects of Heightened Motivation on the Detection of Deception." J. Applied Psychology 47(1963): 408, 410.) Orne concluded that because college students cherish the qualities of high intelligence and great emotional control, the test group subjects during the examination were anxious that they be successful in deceiving the polygrapher in order to affirm the fact that they possessed these qualities. This "motivational" factor heightened their physiological response and made their detection easier to detect.

Orne arrived at the same conclusion in another similar study. (Gustafson and Orne, "Effects of Perceived Role and Role Success of Detection of Deception," supra.) Other research indicates approximately 95 percent accuracy where the motivation consisted of only a small cash bonus for avoiding detection. (Podlesny and Raskin, "Effectiveness of Techniques and Physiological Measures in Detection of Deception." Psychophysiology 15(1978): 344; Raskin and Hare, "Psychopathy and Detection of Deception in a Prison Population. Psycophysiology 15 (1978): 126.)

Orne's research demonstrates that even minimal incentives provide sufficient motivation to allow the detection of deception on a polygraph exam. The motivations for a criminal defendant submitting to a polygraph test even in a confidential setting are significantly greater than those in Orne's research. For example, the defendant is faced with: (a) the possible loss of his credibility in the eyes of his counsel and the chance that counsel might resign or urge the defendant to plead guilty; (b) the loss of his own self esteem when confronted by the polygraph examiner with his finding of the defendant's guilt; (c) the possible discovery of the adverse outcome by the prosecution; and (d) the loss of legal and tactical benefits by not passing the exam, such as the possibility of acquittal or dismissal of the charges if the results are favorable.

Orne's own study discredits his "friendly polygrapher" theory. The college students in the experiment did not have to fear detection. There was no external repercussions if the examiner discovered their lies. By flunking, they lost only the potential benefits they would have received by passing the test. The examiner was in effect, a "friendly polygrapher," yet the examiner was successful in discovering the subject's deception.

Although appellant was examined by a polygrapher in a confidential setting, he was sufficiently motivated to produce readable and conclusive responses of the polygraph test. If he had not been motivated while

taking the exam, i.e., had no fear of detection, the results would have been inconclusive instead of conclusive. Appellant's exam, however, produced conclusive responses which indicated he did not rob the Kinney's Shoe Store, nor assault the store's employee.[3] Thus, the court incorrectly relied on the "friendly polygrapher" theory in denying the admission of the polygraph evidence.

Appellant recognizes that California courts have not yet ruled polygraph evidence to be sufficiently reliable to justify expert testimony at trial based on polygraph test results. (People v. Thornton (1974) 11 Cal. 3d 738; People v. Carter (1957) 48 Cal.2d 737). However, by disallowing such evidence in the past, the courts did not intend to foreclose the introduction of polygraph evidence in the future. The California Supreme Court in evaluating the admissiblity of new scientific techniques stated that it "simply circumscribe[s], carefully and deliberately, the admission of evidence born of new techniques until the time when there is demonstrated solid scientific approval and support of the new methods." (People v. Kelly (1976) 17 Cal.3d 24, 41.) If a proponent of such evidence were able to demonstrate that the scientific technique was reliable and had achieved general acceptance in the scientific community, it would be properly admissible. (Ibid; People v. Duck Wong (1976) 18 Cal.3d 178.)

In the instant case, the court denied the admission of the polygraph evidence and the motion for new trial based on the invalid concept of the "friendly polygrapher." Therefore, appellant submits that the case must be remanded to the trial court for a hearing on the admissiblity of that evidence with directions that the court decide the issue of admissibility without relying upon the "friendly polygrapher" concept. Because the polygraph evidence was highly relevant to appellant's alibi defense, it was reversible error to exclude such evidence. (People v. Torres (1964) 61 Cal.2d 264; People v. Bynon (1956) 146 Cal.App.2d 7.) Thus the trial court must be instruction to grant the motion for new trial if it determines that the polygraph evidence is admissible. (People v. Oliver (1975) 46 Cal.App.3d 747.)

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3. A second polygraph exam was conducted by Kenneth Hayse of the Justice Department. The results indicated that appellant lied when he denied involvement in the Kinney Shoe Store robbery. Appellant submits that that exam was unreliable based on Dr. Raskin's evaluation of that examination. (November 16, 1978 transcript; see Raskin's affidavit.)

AN ARGUMENT FOR ADMISSIBILITY OVER OBJECTION

By

Charles M. Sevilla

After an extensive foundational hearing on the validity of polygraph technique, the trial court made findings that, but for California stare decisis, would have compelled admission of appellant's proffered polygraph test results.

Appellant recognizes that California appellate courts have not yet ruled polygraph evidence sufficiently reliable to justify expert testimony at trial based on polygraph test results. (People v. Thornton (1974) 11 Cal.3d 738; People v. Carter (1957) 48 Cal.2d 737; In re Joaquin S. (1979) 88 Cal.App.3d 80; People v. Adams (1975) 53 Cal.App.3d 109.) However, by disallowing such evidence in the past, the courts did not intend to foreclose the introduction of polygraph evidence in the future. The California Supreme Court in evaluating the admissibility of new scientific techniques stated that it "simply circumscribe[s], carefully and deliberately, the admission of evidence born of new techniques until the time when there is demonstrated solid scientific approval and support of the new methods." (People v. Kelly (1976) 17 Cal.3d 24, 41.) If a proponent of such evidence were able to demonstrate that the scientific technique was reliable and had achieved general acceptance in the scientific community, it would be properly admissible. (Ibid., People v. Duck Wong (1976) 18 Cal.3d 178, 189.)

In the instant case, the court denied the admission of the polygraph evidence after finding it reliable and helpful to a trier of fact. This argument will demonstrate the correctness of the court's findings and why the appellate law of this state must accommodate trial court discretion to admit polygraph evidence. The trial court erred in ruling that it had no such discretion to admit such evidence. Given the nature of this case, essentially a perjury trial, no more relevant, probative evidence could be offered. See United States v. Ridling (CD Mich. 1972) 350 F.Supp. 90, 93 (a perjury case "is the best case for testing the admissibility of polygraph evidence.")

Testimony of Charles Reck

Charles Glenn Reck, a polygrapher since 1962, testified below as follows. He was at one time the chief polygrapher for the sheriff's department in San Bernardino and has performed criminal examinations for local, state and federal agencies(id.) He has completed approximately 15,000 polygraph cases in a criminal context and about 7,000 civil tests. Each test on an issue is a separate examination. Thus, he has polygraphed about 6,000 or 7,000 people in a criminal context and 4,000 in civil. Each

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He taught interrogation interviewing for the San Diego County Sheriffs Department between 1964 and 1973 and has testified as an expert witness in many superior and justice courts concerning polygraph evidence. Also, the district attorney of San Bernardino has relied on his polygraph testing. He has letters of commendation from the district attorney's office for his work in polygraph cases.

Mr. Reck is a member of the California Association of Polygraph Examiners, and attended many polygraph seminars, after graduating from polygraph school at Long Beach State College in 1962. As a law enforcement polygrapher, Reck took many confessions or admissions as a result of polygraph tests. Now, as a polygrapher for private attorneys, he finds many of his subjects deceitful.

Mr. Reck described a polygraph instrument and how it works. In an exam setting no words are used that the subject does not state in advance that he understands. With respect to the examination of appellant, Reck had copies of police reports, and a copy of the information. During a pre-test interview of appellant, Reck spent two and one-half hours talking to his subject. Appellant appeared to be rested and in good health. It is imperative that rapport be established with the subject during the pre-test interview. Four different charts were run on the appellant. Several of the relevant questions were, "About that receipt in question, did you yourself make it out?"; "Regarding that receipt in question, did you have someone make it out for you to benefit you at trial?"; "Concerning that receipt, did you get someone to make it out for you after your arrest?"; "Did you make that receipt out after your arrest?"

Reck's opinion with respect to the validity of the polygraph tests in measuring deception is that when properly conducted they have a high degree of validity. While in the sheriff's department, he kept statistics on accuracy by comparing the results of the criminal cases (e.g., dismissal, conviction) with his deception versus non-deception results. He found that he was in the 90 percent accuracy range.

As a result of the responses, Reck formed the opinion that appellant answered the relevant questions truthfully.

Court Findings[1]

After hearing the above testimony and argument of counsel, the trial court made the following findings: 1) that Charles G. Reck qualified as an expert polygraph examiner; 2) the science of polygraphy is sufficiently reliable in helping resolve the issues before the court; 3) that Mr. Reck applied the appropriate polygraph procedures and that the results obtained are reasonably reliable; 4) that Mr. Reck conducted an adequate pre-test interview; 5) that Mr. Reck properly determined that the defendant was a fit subject for the examination; 6) that based upon the foregoing findings, an adequate foundation was laid for the introduction into evidence of the testimony of Mr. Reck with respect to his examination of appellant; but 7) that stare decisis precluded admission.

The Standard for Admission: Acceptance Within the Scientific Field of Polygraphy[2]

Over 50 years ago, Frye v. United States, 293 F. 1013 (D.C. Cir. 1923), stated the applicable standard for the admission of scientific evidence such as polygraph results:

> "Just when a scientific principle or discovery crosses the line beteen the experimental and demonstrable stages is difficult to define. Somewhere in this twilight zone the evidential force of the principle must be recognized, and while courts will go a long way in admitting expert testimony deduced from a well-recognized scientific principle or discovery, the thing from which the deduction is made must be sufficiently established to have gained general acceptance in the particular field in which it belongs. [(At 1014); emphasis added.]

This rule has been adopted in this state. (People v. Kelly, supra, at 30.) The Frye court refused to admit polygraph results (a crude Marston systolic blood pressure instrument) despite the accuracy of Marston's findings.[3] Marston's machine was too new and untested to have gained general scientific acceptance. The same cannot be said to be true today -- a modern polygraph instrument bears little resemblance to the Marston contraption.[4]

If the shibboleth to admissibility is general scientific acceptance in its field, how is this standard to be applied? Until recently, courts uniformly excluded polygraph evidence under this banner, leading one to conclude that "general acceptance" meant "total acceptance." McCormick, writing in 1954, commented:

> One reason usually given for these general pronouncements (as to admissibility) is that the tests have not yet won sufficient acceptance of their validity. Frequently, the opinions seem to demand a universality of scientific approval, which as pointed out above, has no basis in the standard applied to other kinds of expert testimony in scientific matters. If we thus deflate the requirement to the normal standard which simply demands that the theory or device be accepted by a substantial body of scientific opinion, there can be little doubt that the lie-detector technique meets this requirement.
> (McCormick, Law of Evidence §174, p. 369-371 (1954).)

Another legal giant, Wigmore, concurs with McCormick's concept of the standard for admission of polygraph evidence:

> The polygraph examiner should not be held to any greater degree of accuracy than any other scientific endeavor relating to the examination of a human being. Furthermore, perfection in test results is not a prerequisite to the admissibility of evidence obtainable by use of scientific instruments or techniques.
> (Wigmore, Evidence, §990 (3rd ed. 1940).)

With other types of scientific evidence, neither newness nor lack of absolute certainty have been sufficient to render them inadmissible.

Every useful new development must have its first day in court and conflicting opinions about a technique's accuracy and precision are to be expected. Court records are full of such disagreements among psychiatrists, engineers, medical doctors, to name but a few expert witnesses. Yet those disagreements have not made inadmissable psychiatric diagnoses,[5] neutron activation results,[6] nalline tests,[7] or a legion of other scientific devices.

Wigmore would apply the Kelly-Frye general acceptance rule to polygraph evidence once it is demonstrated that the "scientific principles ... [are] ... accepted as dependable for the proposed purpose by the profession concerned in that branch of science or its related art." Wigmore, Science of Judicial Proof, (3rd ed. p. 450, 1937.) If Kelly, Frye, McCormick and Wigmore correctly set the standard for admissibility of polygraph evidence at acceptance within the particular field to which it belongs, the next issue is what is the degree of acceptance required.

Polygraphy Has General Acceptance Within the Field to Which it Belongs

The science of polygraphy has advanced to such a state that it has attained the general acceptance of the vast majority of psychologists, physiologists and polygraphers who have studied the detection of human deception with a polygraph. The test of general acceptance within the field of polygraphy requires the courts to look to the opinion of those scientists and polygraphers who have studied the instrument. In People v. Williams (1958) 164 Cal.App.2d 858, 861, the court noted that the general level of knowledge of the medical profession as to the nalline test was one of unfamiliarity and thus irrelevant to meeting the standard of admissibility: "All of the medical testimony points to the reliability of the test. It has been generally accepted by those who would be expected to be familiar with its use. In this age of specialization, more should not be required." (Emphasis added.)

Although polls of psychiatrists have been taken which support the polygraph (e.g., Cureton, "A Consensus as to the Validity of Polygraph Procedures" 22 Tenn.L.Rev. 728, 740 (1953), they are not probative for they undoubtedly include psychiatrists ignorant of the scientific literature on the subject. Appellant submits that a "general acceptance" test can only have merit if those in the general scientific community unfamiliar with the subject matter are excluded from consideration.

There is, of course, a body of scientists and polygraphers familiar with the polygraph. Appellant sets forth below quotations from studies of some of these scientists who, in their controlled condition laboratory experiments, regularly conclude as follows:[8]

1. "The results of this study clearly demonstrate the effectiveness of the control-question technique in detecting deception employing a mock-crime paradigm with a population of prison inmates using the numerical scoring system the accuracy of decisions was 95.5% ..." Raskin & Hare "Psychopathy and Detection of Deception in a Prison Population," Psychophysiology (1978): 126, 133.

2. "The results of this project clearly indicate that polygraph examinations utilizing control-question or guilty-knowledge tests are highly accurate." Raskin, Barland, Podlesny "Validity and Reliability of

Detection of Deception," Polygraph (1)(March 1977): 33.

3. "Laboratory experiments, including those in which crimes have been simulated (e.g., Davidson, 1968; Kubis, 1962), have generally tended to support the effectiveness of the polygraph, and in particular that of the GSR indicator, for the detection of deception." P.J. Bersh, "A Validation Study of PolygraphExaminer Judgments." Journal of Applied Psychology 53(1969): 399.

4. "Previous research has indicated that personal or idiosyncratic material (Lykken, 1960), and stimuli derived from mock crime paradigms (Lykken, 1959; Thackray and Orne, 1967) yield high rates of detection." R. Thackray and M. Orne, "A Comparison of Physiological Indices in Detection of Deception," Psychophysiology 4 (1968): 329-330.

5. "The study may be viewed as one test of the validity of the polygraph as a means of determining facts in narratives relating to criminal events.

"As one test of the validity of the polygraph the study offers support for the contention that deception efforts can be detected by means of polygraph." Dr. R.H. Blum and W. Osterlich, "The Polygraph Examination as a Means for Detecting Truth and Falsehood in Stories Presented by Police Informants," J. Crim. L. Criminol., and Police Science, 59 (1968): 133, 36.

6. "It would appear, then, that the 'optimum' conditions for detection of deception would be found in a situation where S[subject] must prove he is innocent ... where he is very highly motivated to deceive ... and where he 'knows' exactly when he must deceive ..." Gustafson and Orne, "The Effects of Task and Method of Stimulus Presentation on the Detection of Deception," Journal of Applied Psychology 48(1964): 383-387.

7. "The fact that motivated subjects were detected far more readily than chance, supports the claims made for lie detection in actual life contexts where motivation would be maximal." Laurence Gustafson, Martin T. Orne, "Effects of Heightened Motivation on the Detection of Deception," Journal of Applied Psychology 53(1963): 399, 411.

There is more of course.[9] Appellant has found no study which demonstrates that competently conducted polygraph tests are invalid in their conclusions.

Opening California's Door of Discretion to Polygraph Evidence

Were the court below writing on a "clean slate," the proffered polygraph polygraph evidence submitted by the appellant would have been admitted into evidence for the trier of fact to weigh along with the other evidence. The foundation set forth below was sufficient to convince the trial court of the accuracy of a competently run polygraph examination, but appellate decisions, according to the trial court, foreclosed admission.[10] Appellant submits that on the basis of the unrefuted expert testimony and scientific literature in the record, this court should rule that appellant has given sufficient proof to allow trial courts discretion to admit polygraph into evidence for whatever weight a trier of fact may choose to give it. A policy of discretionary[11] admission has been

adopted by several courts which have had the benefit of full evidentiary hearings. See, e.g., United States v. DeBetham (9th Cir. 1972) 470 F.2d 1367, aff'g. 348 F.Supp. 1377 (S.D. Cal. 1972); United States v. Ridling (C.D. Mich.) 350 F.Supp. 90; State of New Mexico v. Dorsey (1975) 88 N.M. 184, 539 P.2d 204. See also Am. Jur., supra, p. 24, fn. 68.

It is time that California courts recognized the contribution the polygraph will make to our justice system. Twenty years ago, Justice Potter Stewart wrote that "Any rule that impedes the discovery of truth in a court of law impedes as well the doing of justice." Hawkins v. United States, 358 U.S. 74, 81 (1958)(concurring). Continuance of an absolute bar to polygraph evidence does impede the discovery of truth. Polygraph evidence has "something valuable to add to the administration of justice. And the judiciary can no longer afford to ignore the polygraph...." (United States v. DeBetham (SD Calif. 1972) 348 F.Supp. 1377, 1384, aff'd 470 F.2d 1367, 1368 (9th Cir. 1972) ("Simply stated, the evidence at the hearing vigorously supports the accuracy of polgyraph evidence").

The court below, despite the compelling evidentiary exposition and substantial factfindings, effectively found that it had no discretion to admit or exclude expert opinion evidence. Accordingly, "there has been a failure to exercise judicial discretion," cf. People v. Benn (1972) 7 Cal.3d 530, 535, and the failure constitute an abuse of discretion.[12] Having determined the validity of the system after extensive hearings, the court was not foreclosed from consideration of the specific opinion evidence which was offered.

Footnotes

1. See People v. King (1968) 266 Cal.App.2d 437, 443 ("The determination of whether a scientific test has received general acceptance by recognized experts in the field so as to justify the admission of expert testimony based on the results of the test is primarily a question of fact for the trial court.")

2. This argument concerns itself exclusively with the admission of polygraph evidence at a criminal trial over objection of an opposing party. California law has long held polygraph evidence sufficiently reliable to warrant admission under a stipulation by both sides. E.g., People v. Hauser (1948) 85 Cal.App.2d 686, 695.

3. Mr. Frye was convicted of murdering his wife. Three years later, the true killer confessed and Mr. Frye was released from prison. (State v. Valdez (1962) 91 Ariz. 274, 371 P.2d 894, 896, n.4.)

4. For a description of the modern polygraph and how it works, see "Reliability of the Polygraph," 14 Am.Jur. Proof of Facts 7-13 (1977) [hereinafter cited as Am.Jur.].

5. Ennis & Litwack, "Psychiatry and the Presumption of Expertise: Flipping Coins in the Courtroom," 62 Calif. L. Rev. 693, 736-737 (1974).

6. E.g., United States v. Stifel, 433 F.2d 431 (6th Cir. 1970).

7. E.g., People v. Williams (1958) 164 Cal.App.2d 858.

8. "Such writings may be considered by courts in evaluating the reliability of new scientific methodology." (People v. Kelly, supra, at 35.)

9. See extensive bibliography in Barland & Raskin, Electrodermal Activity in Psychological Research, Academic Press, 1973, pp. 471-477.

10. The trial court erred in denying itself discretion. In People v. Duck Wong (1976) 18 Cal.3d 178 at 189, the Supreme Court noted that a full preliminary hearing on the reliability of polygraph evidence is required before admission may be considered. Impliedly, if the proper showing is made, the trial court should have the authority to admit the evidence.

11. "[T]he courts should meet the need for this new resource for fact-finding and minimize the dangers, by substituting for the rule of exclusion a standard of discretion, and by holding accordingly that the judge may in his discretion admit expert testimony giving the results of a test of an accused or other witness ... when the judge finds (a) that the expert is highly training and experienced, and (b) that the probative value outweighs the danger of prejudice, confusion and waste of time." (McCormick, supra, 174.)

12. See, e.g., People v. Russel (1968) 69 Cal.2d 187, 199-200, where Justice Sullivan concluded that "neither the reason given by the trial court, nor the reasons advanced by the prosecutor ... were sufficient to warrant exclusion of the psychiatric evidence outline in the offer of proof. In addition, we have been unable to conceive of any other proper basis for the ruling. We therefore conclude that the ruling was in excess of the court's legal discretion in the premises, and that the judgment must be reversed."

* * * * * *

POLYGRAPH QUADRI-ZONE REACTION COMBINATION GUIDE

By

James Allan Matte

The Quadri-Zone Reaction Combination Guide is designed to provide users of the Polygraph Quadri-Zone Comparison Technique with a chart analysis guide in twenty-three (23) possible reaction combinations within the zones of comparison.

The enclosed chart reflects the test structure of the Polygraph Quadri-Zone Comparison Technique[1] which will enable those readers who are not familiar with the Quadri-Zone Comparison Technique to relate the question numbers and their color code to the particular type of test question each represents.

In reviewing the Quadri-Zone Reaction Combination Guide, the reader will note that, excluding the Black Zone (questions 25 & 26) which are not scored, each zone contains a maximum score allowable under the circumstances shown. These scores are attained with the elimination of the weakest score or the score that does not follow the general trend.[2] The Quadri-Zone Comparison Technique has four (4) zones for comparison, as depicted in the enclosed test structure, but only zones #2, #3 and #4 are scored for a determination of truthfulness, deception, or inconclusive.

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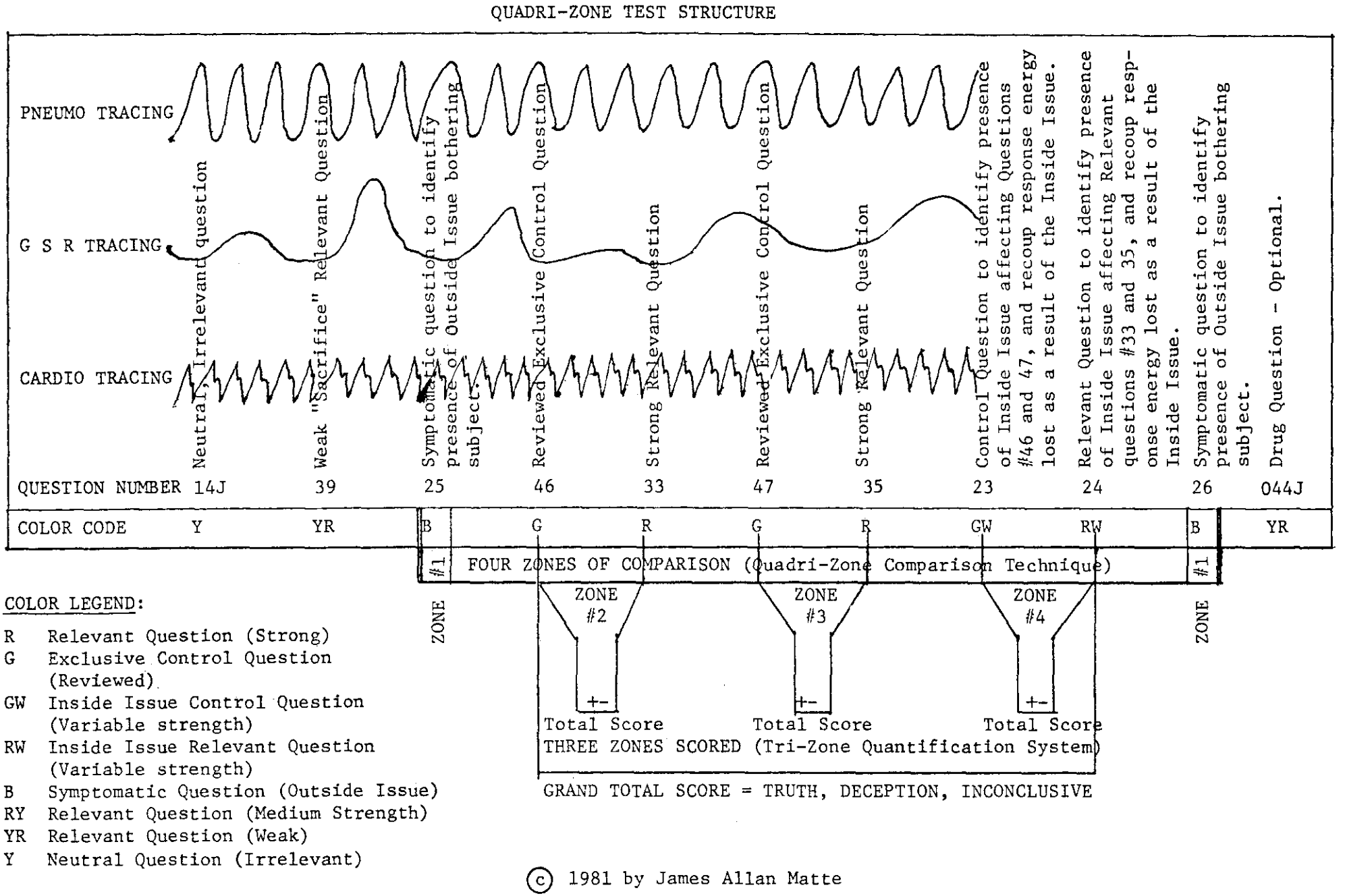
1. For detailed discussion of the Polygraph Quadri-Zone Comparison Technique, and the Inside Issue Factor (Test questions 23 and 24), see Polygraph 7(4)(December 1978): 266-280; or The Art and Science of the Polygraph Technique by Matte, J.A., Publishers: Charles C. Thomas, Springfield, Illinois, 1980.

2. Many polygraphists are using the older Backster scoring method of eliminating the weakest score or the score that does not follow the general score trend within each zone compared and scored, while other polygraphists tally all scores obtained. Both scoring methods are scientifically sound; the latter is easier to defend. For detailed discussion of the numerical scoring system consult above mentioned publications.



COLOR LEGEND:

- R Relevant Question (Strong)
- G Exclusive Control Question (Reviewed)
- GW Inside Issue Control Question (Variable strength)
- RW Inside Issue Relevant Question (Variable strength)
- B Symptomatic Question (Outside Issue)
- RY Relevant Question (Medium Strength)
- YR Relevant Question (Weak)
- Y Neutral Question (Irrelevant)

QUADRI-ZONE REACTION COMBINATION

COMBO	ZONES OF COMPARISON		COLOR CODE		PRESENCE OF REACTION		SCORE		INDICATION		REMEDY
A	46	33	G	R		33	-1 to -9	A1	RESPONSE TO RED ZONE QUESTION (33) AND LACK OF RESPONSE TO GREEN ZONE (46) INDICATES DECEPTION TO RELEVANT QUESTION.	A1	NO REMEDY REQUIRED. RED ZONE QUESTION IDEALLY FORMULATED: FUNCTIONING AS DESIGNED.
	47	35	G	R		35	-1 to -9	A2	RESPONSE TO RED ZONE QUESTION (35) AND LACK OF RESPONSE TO GREEN ZONE (47) INDICATES DECEPTION TO RELEVANT QUESTION.	A2	NO REMEDY REQUIRED. RED ZONE QUESTION IDEALLY FORMULATED; FUNCTIONING AS DESIGNED.
	23	24	G/W	R/W			0	A3	LACK OF RESPONSE TO GREEN/WHITE (23) AND RED/WHITE (24) ZONE INDICATES NO FEAR OF ERROR IS DAMPENING GREEN ZONE (46 & 47) AND FEAR OF DETECTION TO RED ZONE (33&35) NOT RECHANNELED INTO HOPE OF ERROR (24).	A3	NO REMEDY REQUIRED. NO EVIDENCE OF INSIDE ISSUE DAMPENING GREEN OR RED ZONES.
	25	26	B	B			NA	A4	LACK OF RESPONSE TO BOTH BLACK ZONE QUESTIONS (25 & 26) INDICATES NO OUTSIDE ISSUE BOTHERING SUBJECT DUE TO MISTRUST OF POLYGRAPHIST.	A4	NO REMEDY REQUIRED. SUBJECT APPEARS CONVINCED POLYGRAPHIST WILL NOT ASK UNREVIEWED QUESTION DURING EXAMINATION.
B	46	33	G	R	46		+1 to +9	B1	RESPONSE TO GREEN ZONE QUESTION (46) AND LACK OF RESPONSE TO RED ZONE (33) INDICATES TRUTHFULNESS TO RELEVANT QUESTION.	B1	NO REMEDY REQUIRED. RED ZONE QUESTION IDEALLY FORMULATED; GREEN ZONE FUNCTIONING AS DESIGNED.
	47	35	G	R	47		+1 to +9	B2	RESPONSE TO GREEN ZONE QUESTION (46) AND LACK OF RESPONSE TO RED ZONE (33) INDICATES TRUTHFULNESS TO RELEVANT QUESTION.	B2	NO REMEDY REQUIRED. RED ZONE QUESTION IDEALLY FORMULATED; GREEN ZONE FUNCTIONING AS DESIGNED.
	23	24	G/W	R/W			0	B3	LACK OF RESPONSE TO GREEN/WHITE (23) AND RED/WHITE (24) ZONE INDICATES NO FEAR OF ERROR IS DAMPENING GREEN ZONE (46 & 47) AND FEAR OF DETECTION TO RED ZONE (33&35) NOT RECHANNELED INTO HOPE OF ERROR (24).	B3	NO REMEDY REQUIRED. NO EVIDENCE OF INSIDE ISSUE DAMPENING GREEN OR RED ZONES.
	25	26	B	B			NA	B4	LACK OF RESPONSE TO BOTH BLACK ZONE QUESTIONS (25 & 26) INDICATES NO OUTSIDE ISSUE BOTHERING SUBJECT DUE TO MISTRUST OF POLYGRAPHIST.	B4	NO REMEDY REQUIRED. SUBJECT APPEARS CONVINCED POLYGRAPHIST WILL NOT ASK UNREVIEWED QUESTION DURING EXAMINATION.
C	46	33	G	R	46	33	-1 to -3	C1	STRONG RESPONSE TO RED ZONE QUESTION (33) AND EQUAL STRONG RESPONSE TO GREEN ZONE (46) INDICATES SERIOUS GREEN ZONE DEFECT.	C1	ADMINISTER STIMULATION TEST TO REASSURE SUBJECT OF ACCURACY OF TEST. IF ALREADY GIVEN, REDUCE GREEN ZONE QUESTION INTENSITY BY ALTERING SUBJECT AGE CATEGORY OR CHANGING SCOPE OF GREEN ZONE.
	47	35	G	R	47	35	-1 to -3	C2	STRONG RESPONSE TO RED ZONE QUESTION (33) AND EQUAL STRONG RESPONSE TO GREEN ZONE (46) INDICATES SERIOUS GREEN ZONE DEFECT.	C2	REMEDY THE SAME AS C1 ABOVE.
	23	24	G/W	R/W			0	C3	LACK OF RESPONSE TO GREEN/WHITE (23) AND RED/WHITE (24) ZONE INDICATES NO FEAR OF ERROR IS DAMPENING GREEN ZONE (46 & 47) AND FEAR OF DETECTION TO RED ZONE (33&35) NOT RECHANNELED INTO HOPE OF ERROR (24).	C3	NO REMEDY REQUIRED. NO EVIDENCE OF INSIDE ISSUE DAMPENING GREEN OR RED ZONES.
	25	26	B	B			NA	C4	LACK OF RESPONSE TO BOTH BLACK ZONE QUESTIONS (25 & 26) INDICATES NO OUTSIDE ISSUE BOTHERING SUBJECT DUE TO MISTRUST OF POLYGRAPHIST.	C4	NO REMEDY REQUIRED. SUBJECT APPEARS CONVINCED POLYGRAPHIST WILL NOT ASK UNREVIEWED QUESTION DURING EXAMINATION.
D	46	33	G	R			0	D1	LACK OF RESPONSE TO RED ZONE QUESTION (33) AND GREEN ZONE QUESTION (46) USUALLY INDICATES INEFFECTIVE GREEN ZONE QUESTION; THIS RULE NULLIFIED BY BLACK ZONE RESPONSE.	D1	NO REMEDY REQUIRED. RED ZONE AND GREEN ZONE QUESTIONS WILL BE FUNCTIONING AS DESIGNED AFTER BLACK ZONE QUESTION RESPONSE SUBSIDES.
	47	35	G	R			0	D2	LACK OF RESPONSE TO RED ZONE QUESTION (33) AND GREEN ZONE QUESTION (46) USUALLY INDICATES INEFFECTIVE GREEN ZONE QUESTION; THIS RULE NULLIFIED BY BLACK ZONE RESPONSE.	D2	NO REMEDY REQUIRED. RED ZONE AND GREEN ZONE QUESTIONS WILL BE FUNCTIONING AS DESIGNED AFTER BLACK ZONE QUESTION RESPONSE SUBSIDES.
	23	24	G/W	R/W			0	D3	LACK OF RESPONSE TO GREEN/WHITE (23) AND RED/WHITE (24) ZONE INDICATES NO FEAR OF ERROR IS DAMPENING GREEN ZONE (46 & 47) AND FEAR OF DETECTION TO RED ZONE (33&35) NOT RECHANNELED INTO HOPE OF ERROR (24).	D3	NO REMEDY REQUIRED. NO EVIDENCE OF INSIDE ISSUE DAMPENING GREEN OR RED ZONES.
	25	26	B	B	25	26	NA	D4	RESPONSE TO ONE OR BOTH BLACK ZONE QUESTIONS (25 & 26) INDICATES OUTSIDE ISSUE BOTHERING SUBJECT DUE TO MISTRUST OF POLYGRAPHIST.	D4	POLYGRAPHIST MUST GAIN SUBJECT'S CONFIDENCE REGARDING AVOIDANCE OF UNREVIEWED QUESTIONS EMBRACING OUTSIDE ISSUE.
E	46	33	G	R		33	-1 to -9	E1	RESPONSE TO RED ZONE QUESTION (33) AND LACK OF RESPONSE TO GREEN ZONE (46) INDICATES DECEPTION TO RELEVANT QUESTION.	E1	NO REMEDY REQUIRED. RED ZONE QUESTION IDEALLY FORMULATED; FUNCTIONING AS DESIGNED.
	47	35	G	R		35	-1 to -9	E2	RESPONSE TO RED ZONE QUESTION (35) AND LACK OF RESPONSE TO GREEN ZONE (47) INDICATES DECEPTION TO RELEVANT QUESTION.	E2	NO REMEDY REQUIRED. RED ZONE QUESTION IDEALLY FORMULATED; FUNCTIONING AS DESIGNED.
	23	24	G/W	R/W			0	E3	LACK OF RESPONSE TO GREEN/WHITE (23) AND RED/WHITE (24) ZONE INDICATES NO FEAR OF ERROR IS DAMPENING GREEN ZONE (46 & 47) AND FEAR OF DETECTION TO RED ZONE (33&35) NOT RECHANNELED INTO HOPE OF ERROR (24).	E3	NO REMEDY REQUIRED. NO EVIDENCE OF INSIDE ISSUE DAMPENING GREEN OR RED ZONES.
	25	26	B	B	25	26	NA	E4	RESPONSE TO ONE OR BOTH BLACK ZONE QUESTIONS (25 & 26) INDICATES OUTSIDE ISSUE BOTHERING SUBJECT DUE TO MISTRUST OF POLYGRAPHIST.	E4	POLYGRAPHIST MUST GAIN SUBJECT'S CONFIDENCE REGARDING AVOIDANCE OF UNREVIEWED QUESTIONS EMBRACING OUTSIDE ISSUE.

QUADRI-ZONE REACTION COMBINATION

COMBO	ZONES OF COMPARISON		COLOR CODE		PRESENCE OF REACTION		SCORE		INDICATION		REMEDY
F	46	33	G	R	46		+1 to +9	F1	RESPONSE TO GREEN ZONE QUESTION (46) AND LACK OF RESPONSE TO RED ZONE (33) INDICATES TRUTHFULNESS TO RELEVANT QUESTION.	F1	NO REMEDY REQUIRED. RED ZONE QUESTION IDEALLY FORMULATED; GREEN ZONE FUNCTIONING AS DESIGNED.
	47	35	G	R	47		+1 to +9	F2	RESPONSE TO GREEN ZONE QUESTION (47) AND LACK OF RESPONSE TO RED ZONE (35) INDICATES TRUTHFULNESS TO RELEVANT QUESTION.	F2	NO REMEDY REQUIRED. RED ZONE QUESTION IDEALLY FORMULATED; GREEN ZONE FUNCTIONING AS DESIGNED.
	23	24	G/W	R/W			0	F3	LACK OF RESPONSE TO GREEN/WHITE (23) AND RED/WHITE (24) ZONE INDICATES NO FEAR OF ERROR IS DAMPENING GREEN ZONE (46&47) AND FEAR OF DETECTION TO RED ZONE (33&35) NOT RECHANNELED INTO HOPE OF ERROR (24).	F3	NO REMEDY REQUIRED. NO EVIDENCE OF INSIDE ISSUE DAMPENING GREEN OR RED ZONES.
	25	26	B	B	25	26	NA	F4	RESPONSE TO ONE OR BOTH BLACK ZONE QUESTIONS (25 & 26) INDICATES OUTSIDE ISSUE BOTHERING SUBJECT DUE TO MISTRUST OF POLYGRAPHIST.	F4	POLYGRAPHIST MUST GAIN SUBJECT'S CONFIDENCE REGARDING AVOIDANCE OF UNREVIEWED QUESTIONS EMBRACING OUTSIDE ISSUE.
G	46	33	G	R	46	33	-1 to -3	G1	STRONG RESPONSE TO RED ZONE QUESTION (33) AND EQUAL STRONG RESPONSE TO GREEN ZONE (46) INDICATES SERIOUS GREEN ZONE DEFECT.	G1	REDUCE GREEN ZONE QUESTION INTENSITY BY ALTERING SUBJECT AGE CATEGORY OR CHANGING SCOPE OF GREEN ZONE QUESTION.
	47	35	G	R	47	35	-1 to -3	G2	STRONG RESPONSE TO RED ZONE QUESTION (35) AND EQUAL STRONG RESPONSE TO GREEN ZONE (47) INDICATES SERIOUS GREEN ZONE DEFECT.	G2	REDUCE GREEN ZONE QUESTION INTENSITY BY ALTERING SUBJECT AGE CATEGORY OR CHANGING SCOPE OF GREEN ZONE QUESTION.
	23	24	G/W	R/W			0	G3	LACK OF RESPONSE TO GREEN/WHITE (23) AND RED/WHITE (24) ZONE INDICATES NO FEAR OF ERROR IS DAMPENING GREEN ZONE (46 & 47) AND FEAR OF DETECTION TO RED ZONE (33&35) NOT RECHANNELED INTO HOPE OF ERROR (24).	G3	NO REMEDY REQUIRED. NO EVIDENCE OF INSIDE ISSUE DAMPENING GREEN OR RED ZONES.
	25	26	B	B	25	26	NA	G4	RESPONSE TO ONE OR BOTH BLACK ZONE QUESTIONS 25 & 26) INDICATES OUTSIDE ISSUE BOTHERING SUBJECT DUE TO MISTRUST OF POLYGRAPHIST.	G4	POLYGRAPHIST MUST GAIN SUBJECT'S CONFIDENCE REGARDING AVOIDANCE OF UNREVIEWED QUESTIONS EMBRACING OUTSIDE ISSUE.
H	46	33	G	R	46	33	-1 to -3	H1	STRONG RESPONSE TO RED ZONE QUESTION (33) AND EQUAL STRONG RESPONSE TO GREEN ZONE (46) USUALLY INDICATES SERIOUS GREEN ZONE DEFECT. THIS RULE NULLIFIED BY GREEN/WHITE ZONE (23) RESPONSE.	H1	ADMINISTER STIMULATION TEST TO REASSURE SUBJECT OF ACCURACY OF TEST. IF ALREADY ADMINISTERED, THEN REVIEW BOTH INSIDE-ISSUE QUESTIONS (23 & 24) WITH SUBJECT TO INSURE UNDERSTANDING AND SUBJECT CONFIDENCE. FURTHER REVIEW GREEN ZONE QUESTIONS (46 & 47) ONLY WITH SUBJECT.
	47	35	G	R	47	35	-1 to -3	H2	STRONG RESPONSE TO RED ZONE QUESTION (35) AND EQUAL STRONG RESPONSE TO GREEN ZONE (47) USUALLY INDICATES SERIOUS GREEN ZONE DEFECT. THIS RULE NULLIFIED BY GREEN/WHITE ZONE (23 RESPONSE.	H1	REMEDY THE SAME AS (H1) ABOVE.
	23	24	G/W	R/W	23		+1 to +9	H3	RESPONSE TO GREEN/WHITE ZONE (23) AND LACK OF RESPONSE TO RED/WHITE ZONE 24) INDICATES FEAR OF ERROR REGARDING RED ZONE QUESTIONS (33&35) MAKING RED ZONE QUESTIONS UNDULY THREATENING.	H3	REMEDY THE SAME AS (H1) ABOVE. BOTH GREEN ZONE AND RED ZONE QUESTIONS HAVE BEEN IDEALLY FORMULATED. IF (H1) REMEDY INEFFECTIVE, CHANGE GREEN ZONE QUESTIONS.
	25	26	B	B			NA	H4	LACK OF RESPONSE TO BOTH BLACK ZONE QUESTIONS (25 & 26) INDICATES NO OUTSIDE ISSUE BOTHERING SUBJECT DUE TO MISTRUST OF POLYGRAPHIST.	H4	NO REMEDY REQUIRED. SUBJECT APPEARS CONVINCED POLYGRAPHIST WILL NOT ASK UNREVIEWED QUESTION DURING EXAMINATION.
I	46	33	G	R	46	33	-1 to -3	I1	STRONG RESPONSE TO RED ZONE QUESTION (33) AND EQUAL STRONG RESPONSE TO GREEN ZONE (46) USUALLY INDICATES SERIOUS GREEN ZONE DEFECT. THIS RULE NOT NULLIFIED BY RED/WHITE ZONE (24) RESPONSE.	I1	REDUCE GREEN ZONE QUESTION INTENSITY BY ALTERING SUBJECT AGE CATEGORY OR CHANGING SCOPE OF GREEN ZONE QUESTION.
	47	35	G	R	47	35	-1 to -3	I2	STRONG RESPONSE TO RED ZONE QUESTION (35) AND EQUAL STRONG RESPONSE TO GREEN ZONE (47) USUALLY INDICATES SERIOUS GREEN ZONE DEFECT. THIS RULE NOT NULLIFIED BY RED/WHITE ZONE (24) RESPONSE.	I2	REMEDY THE SAME AS (I1) ABOVE.
	23	24	G/W	R/W		24	-1 to -9	I3	RESPONSE TO RED/WHITE ZONE (24) AND LACK OF RESPONSE TO GREEN/WHITE ZONE (23) INDICATES SUBJECT HOPES ERROR WILL BE MADE REGARDING RED ZONE QUESTIONS (33&35) INDICATING DECEPTION REGARDING TARGET ISSUE.	I3	GREEN/WHITE (23) AND RED/WHITE (24) ZONE QUESTIONS FUNCTIONING AS DESIGNED. REMEDY IN (I1) ABOVE SHOULD BE ADMINISTERED WITH THE REVIEW OF BOTH GREEN ZONE AND RED ZONE QUESTIONS.
	25	26	B	B			NA	I4	LACK OF RESPONSE TO BOTH BLACK ZONE QUESTIONS (25 & 26) INDICATES NO OUTSIDE ISSUE BOTHERING SUBJECT DUE TO MISTRUST OF POLYGRAPHIST.	I4	NO REMEDY REQUIRED. SUBJECT APPEARS CONVINCED POLYGRAPHIST WILL NOT ASK UNREVIEWED QUESTION DURING EXAMINATION.

COMBO	ZONES OF COMPARISON		COLOR CODE		PRESENCE OF REACTION		SCORE		INDICATION		REMEDY
J	46	33	G	R	46	33	-1 to -3	J1	STRONG RESPONSE TO RED ZONE QUESTION (33) AND EQUAL STRONG RESPONSE TO GREEN ZONE (46) USUALLY INDICATES SERIOUS GREEN ZONE DEFECT. THIS RULE NOT NULLIFIED BY RED/WHITE ZONE (24) RESPONSE.	J1	REDUCE GREEN ZONE QUESTION INTENSITY BY ALTERING SUBJECT AGE CATEGORY OR CHANGING SCOPE OF GREEN ZONE QUESTION.
	47	35	G	R	47	35	-1 to -3	J2	STRONG RESPONSE TO RED ZONE QUESTION (35) AND EQUAL STRONG RESPONSE TO GREEN ZONE (47) USUALLY INDICATES SERIOUS GREEN ZONE DEFECT. THIS RULE NOT NULLIFIED BY RED/WHITE ZONE (24) RESPONSE.	J2	REMEDY THE SAME AS (J1) ABOVE.
	23	24	G/W	R/W		24	-1 to -9	J3	RESPONSE TO RED/WHITE ZONE (24) AND LACK OF RESPONSE TO GREEN/WHITE ZONE (23) INDICATES SUBJECT HOPES ERROR WILL BE MADE REGARDING RED ZONE QUESTIONS (33&35) INDICATING DECEPTION REGARDING TARGET ISSUE.	J3	GREEN/WHITE (23) AND RED/WHITE (24) ZONE QUESTIONS FUNCTIONING AS DESIGNED. REMEDY IN (J1) ABOVE SHOULD BE ADMINISTERED WITH THE REVIEW OF BOTH GREEN ZONE AND RED ZONE QUESTIONS.
	25	26	B	B	25	26	NA	J4	RESPONSE TO ONE OR BOTH BLACK ZONE QUESTIONS (25 & 26) INDICATES OUTSIDE ISSUE BOTHERING SUBJECT DUE TO MISTRUST OF POLYGRAPHIST.	J4	POLYGRAPHIST MUST GAIN SUBJECT'S CONFIDENCE REGARDING AVOIDANCE OF UNREVIEWED QUESTIONS EMBRACING OUTSIDE ISSUE.
K	46	33	G	R	46	33	-1 to -3	K1	STRONG RESPONSE TO RED ZONE QUESTION (33) AND EQUAL STRONG RESPONSE TO GREEN ZONE (46) USUALLY INDICATES SERIOUS GREEN ZONE DEFECT. THIS RULE NULLIFIED BY GREEN/WHITE ZONE (23) RESPONSE.	K1	ADMINISTER STIMULATION TEST TO REASSURE SUBJECT OF ACCURACY OF TEST. IF ALREADY ADMINISTERED, THEN REVIEW BOTH INSIDE-ISSUE QUESTIONS (23 & 24) WITH SUBJECT TO INSURE UNDERSTANDING AND SUBJECT CONFIDENCE. FURTHER REVIEW GREEN ZONE QUESTIONS (46 & 47) ONLY WITH SUBJECT.
	47	35	G	R	47	35	-1 to -3	K2	STRONG RESPONSE TO RED ZONE QUESTION (33) AND EQUAL STRONG RESPONSE TO GREEN ZONE (46) USUALLY INDICATES SERIOUS GREEN ZONE DEFECT. THIS RULE NULLIFIED BY GREEN/WHITE ZONE (23) RESPONSE.	K2	REMEDY THE SAME AS (K1) ABOVE.
	23	24	G/W	R/W	23		+1 to +9	K3	RESPONSE TO GREEN/WHITE ZONE (23) AND LACK OF RESPONSE TO RED/WHITE ZONE (24) INDICATES FEAR OF ERROR REGARDING RED ZONE QUESTIONS (33&35) MAKING RED ZONE QUESTIONS UNDULY THREATENING.	K3	REMEDY THE SAME AS (K1) ABOVE. BOTH GREEN ZONE AND RED ZONE QUESTIONS HAVE BEEN IDEALLY FORMULATED. IF (K1) REMEDY INEFFECTIVE, CHANGE GREEN ZONE QUESTIONS.
	25	26	B	B	25	26	NA	K4	RESPONSE TO ONE OR BOTH BLACK ZONE QUESTIONS (25 & 26) INDICATES OUTSIDE ISSUE BOTHERING SUBJECT DUE TO MISTRUST OF POLYGRAPHIST.	K4	POLYGRAPHIST MUST GAIN SUBJECT's CONFIDENCE REGARDING AVOIDANCE OF UNREVIEWED QUESTIONS EMBRACING OUTSIDE ISSUE.
L	46	33	G	R	46	33	-1 to -3	L1	STRONG RESPONSE TO RED ZONE QUESTION (33) AND EQUAL STRONG RESPONSE TO GREEN ZONE (46) USUALLY INDICATES SERIOUS GREEN ZONE DEFECT. THIS RULE NULLIFIED BY GREEN/WHITE ZONE (23) AND RED/WHITE ZONE (24) RESPONSES.	L1	ADMINISTER STIMULATION TEST TO REASSURE SUBJECT OF ACCURACY OF TEST. IF ALREADY ADMINISTERED, THEN REVIEW BOTH INSIDE-ISSUE QUESTIONS (23 & 24) WITH SUBJECT TO INSURE UNDERSTANDING AND SUBJECT CONFIDENCE. FURTHER REVIEW GREEN ZONE QUESTIONS (46 & 47) ONLY WITH SUBJECT.
	47	35	G	R	47	35	-1 to -3	L2	STRONG RESPONSE TO RED ZONE QUESTION (35) AND EQUAL STRONG RESPONSE TO GREEN ZONE (47) USUALLY INDICATES SERIOUS GREEN ZONE DEFECT. THIS RULE NULLIFIED BY GREEN/WHITE ZONE (23) AND RED/WHITE ZONE (24) RESPONSES.	L2	REMEDY THE SAME AS (L1) ABOVE.
	23	24	G/W	R/W	23	24	0	L3	EQUAL STRONG RESPONSE TO BOTH RED/WHITE (24) AND GREEN/WHITE (23) ZONE QUESTIONS INDICATES CONFUSION BY SUBJECT REGARDING ONE OR BOTH INSIDE-ISSUE QUESTIONS.	L3	REVIEW WITH SUBJECT BOTH RED/WHITE AND GREEN/WHITE ZONE QUESTIONS TO ASSURE COMPLETE UNDERSTANDING, AND SIMPLIFY WORDING OF QUESTION(S) IF NECESSARY.
	25	26	B	B			NA	L4	LACK OF RESPONSE TO BOTH BLACK ZONE QUESTIONS (25 & 26) INDICATES NO OUTSIDE ISSUE BOTHERING SUBJECT DUE TO MISTRUST OF POLYGRAPHIST.	L4	NO REMEDY REQUIRED. SUBJECT APPEARS CONVINCED POLYGRAPHIST WILL NOT ASK UNREVIEWED QUESTION DURING EXAMINATION.
M	46	33	G	R	46	33	-1 to -3	M1	STRONG RESPONSE TO RED ZONE QUESTION (33) AND EQUAL STRONG RESPONSE TO GREEN ZONE (46) USUALLY INDICATES SERIOUS GREEN ZONE DEFECT. THIS RULE NULLIFIED BY GREEN/WHITE ZONE (23) AND RED/WHITE ZONE (24) RESPONSES.	M1	ADMINISTER STIMULATION TEST TO REASSURE SUBJECT OF ACCURACY OF TEST. IF ALREADY ADMINISTERED, THEN REVIEW BOTH INSIDE-ISSUE QUESTIONS (23 & 24) WITH SUBJECT TO INSURE UNDERSTANDING AND SUBJECT CONFIDENCE. FURTHER REVIEW GREEN ZONE QUESTIONS (46 & 47) ONLY WITH SUBJECT.
	47	35	G	R	47	35	-1 to -3	M2	STRONG RESPONSE TO RED ZONE QUESTION (35) AND EQUAL STRONG RESPONSE TO GREEN ZONE (47) USUALLY INDICATES SERIOUS GREEN ZONE DEFECT. THIS RULE NULLIFIED BY GREEN/WHITE ZONE (23) AND RED/WHITE ZONE (24) RESPONSES.	M2	REMEDY THE SAME AS (M1) ABOVE.
	23	24	G/W	R/W	23	24	0	M3	EQUAL STRONG RESPONSE TO BOTH RED/WHITE (24) AND GREEN/WHITE (23) ZONE QUESTIONS INDICATES CONFUSION BY SUBJECT REGARDING ONE OR BOTH INSIDE-ISSUE QUESTIONS.	M3	REVIEW WITH SUBJECT BOTH RED/WHITE AND GREEN/WHITE ZONE QUESTIONS TO ASSURE COMPLETE UNDERSTANDING, AND SIMPLIFY WORDING OF QUESTION(S) IF NECESSARY.
	25	26	B	B	25	26	NA	M4	RESPONSE TO ONE OR BOTH BLACK ZONE QUESTIONS (25 & 26) INDICATES OUTSIDE ISSUE BOTHERING SUBJECT DUE TO MISTRUST OF POLYGRAPHIST.	M4	POLYGRAPHIST MUST GAIN SUBJECT'S CONFIDENCE REGARDING AVOIDANCE OF UNREVIEWED QUESTIONS EMBRACING OUTSIDE ISSUE.

COMBO	ZONES OF COMPARISON		COLOR CODE		PRESENCE OF REACTION		SCORE		INDICATION		REMEDY
N	46	33	G	R		33	-1 to -9	N1	RESPONSE TO RED ZONE QUESTION (33) AND LACK OF RESPONSE TO GREEN ZONE (46) INDICATES DECEPTION TO RELEVANT QUESTION.	N1	NO REMEDY REQUIRED. RED ZONE QUESTION IDEALLY FORMULATED; FUNCTIONING AS DESIGNED.
	47	35	G	R		35	-1 to -9	N2	RESPONSE TO RED ZONE QUESTION (35) AND LACK OF RESPONSE TO GREEN ZONE (47) INDICATES DECEPTION TO RELEVANT QUESTION.	N2	NO REMEDY REQUIRED. RED ZONE QUESTION IDEALLY FORMULATED; FUNCTIONING AS DESIGNED.
	23	24	G/W	R/W	23	24	0	N3	EQUAL STRONG RESPONSE TO BOTH RED/WHITE (24) AND GREEN/WHITE (23) ZONE QUESTIONS INDICATES CONFUSION BY SUBJECT REGARDING ONE OR BOTH INSIDE-ISSUE QUESTIONS.	N3	REVIEW WITH SUBJECT BOTH RED/WHITE AND GREEN/WHITE ZONE QUESTIONS TO ASSURE COMPLETE UNDERSTANDING, AND SIMPLIFY WORDING OF QUESTION(S) IF NECESSARY.
	25	26	B	B			NA	N4	LACK OF RESPONSE TO BOTH BLACK ZONE QUESTIONS (25 & 26) INDICATES NO OUTSIDE ISSUE BOTHERING SUBJECT DUE TO MISTRUST OF POLYGRAPHIST.	N4	NO REMEDY REQUIRED. SUBJECT APPEARS CONVINCED POLYGRAPHIST WILL NOT ASK UNREVIEWED QUESTION DURING EXAMINATION.
O	46	33	G	R		33	-1 to -9	O1	RESPONSE TO RED ZONE QUESTION (33) AND LACK OF RESPONSE TO GREEN ZONE (46) INDICATES DECEPTION TO RELEVANT QUESTION.	O1	NO REMEDY REQUIRED. RED ZONE QUESTION IDEALLY FORMULATED; FUNCTIONING AS DESIGNED.
	47	35	G	R		35	-1 to -9	O2	RESPONSE TO RED ZONE QUESTION (35) AND LACK OF RESPONSE TO GREEN ZONE (47) INDICATES DECEPTION TO RELEVANT QUESTION.	O2	NO REMEDY REQUIRED. RED ZONE QUESTION IDEALLY FORMULATED; FUNCTIONING AS DESIGNED.
	23	24	G/W	R/W	23	24	0	O3	EQUAL STRONG RESPONSE TO BOTH RED/WHITE (24) AND GREEN/WHITE (23) ZONE QUESTIONS INDICATES CONFUSION BY SUBJECT REGARDING ONE OR BOTH INSIDE-ISSUE QUESTIONS.	O3	REVIEW WITH SUBJECT BOTH RED/WHITE AND GREEN/WHITE ZONE QUESTIONS TO ASSURE COMPLETE UNDERSTANDING, AND SIMPLIFY WORDING OF QUESTION(S) IF NECESSARY.
	25	26	B	B	25	26	NA	O4	RESPONSE TO ONE OR BOTH BLACK ZONE QUESTIONS (25 & 26) INDICATES OUTSIDE ISSUE BOTHERING SUBJECT DUE TO MISTRUST OF POLYGRAPHIST.	O4	POLYGRAPHIST MUST GAIN SUBJECT'S CONFIDENCE REGARDING AVOIDANCE OF UNREVIEWED QUESTIONS EMBRACING OUTSIDE ISSUE.
P	46	33	G	R	46		+1 to +9	P1	RESPONSE TO GREEN ZONE QUESTION (46) AND LACK OF RESPONSE TO RED ZONE (33) INDICATES TRUTHFULNESS TO RELEVANT QUESTION.	P1	NO REMEDY REQUIRED. RED ZONE QUESTION IDEALLY FORMULATED; GREEN ZONE QUESTION FUNCTIONING AS DESIGNED.
	47	35	G	R	47		+1 to +9	P2	RESPONSE TO GREEN ZONE QUESTION (47) AND LACK OF RESPONSE TO RED ZONE (35) INDICATES TRUTHFULNESS TO RELEVANT QUESTION.	P2	NO REMEDY REQUIRED. RED ZONE QUESTION IDEALLY FORMULATED; GREEN ZONE QUESTION FUNCTIONING AS DESIGNED.
	23	24	G/W	R/W	23	24	0	P3	EQUAL STRONG RESPONSE TO BOTH RED/WHITE (24) AND GREEN/WHITE (23) ZONE QUESTIONS INDICATES CONFUSION BY SUBJECT REGARDING ONE OR BOTH INSIDE-ISSUE QUESTIONS.	P3	REVIEW WITH SUBJECT BOTH RED/WHITE AND GREEN/WHITE ZONE QUESTIONS TO ASSURE COMPLETE UNDERSTANDING, AND SIMPLIFY WORDING OF QUESTION(S) IF NECESSARY.
	25	26	B	B			NA	P4	LACK OF RESPONSE TO BOTH BLACK ZONE QUESTIONS (25 & 26) INDICATES NO OUTSIDE ISSUE BOTHERING SUBJECT DUE TO MISTRUST OF POLYGRAPHIST.	P4	NO REMEDY REQUIRED. SUBJECT APPEARS CONVINCED POLYGRAPHIST WILL NOT ASK UNREVIEWED QUESTION DURING EXAMINATION.
Q	46	33	G	R	46		+1 to +9	Q1	RESPONSE TO GREEN ZONE QUESTION (46) AND LACK OF RESPONSE TO RED ZONE (33) INDICATES TRUTHFULNESS TO RELEVANT QUESTION.	Q1	NO REMEDY REQUIRED. RED ZONE QUESTION IDEALLY FORMULATED; GREEN ZONE QUESTION FUNCTIONING AS DESIGNED.
	47	35	G	R	47		+1 to +9	Q2	RESPONSE TO GREEN ZONE QUESTION (47) AND LACK OF RESPONSE TO RED ZONE (35) INDICATES TRUTHFULNESS TO RELEVANT QUESTION.	Q2	NO REMEDY REQUIRED. RED ZONE QUESTION IDEALLY FORMULATED; GREEN ZONE QUESTION FUNCTIONING AS DESIGNED.
	23	24	G/W	R/W	23	24	0	Q3	EQUAL STRONG RESPONSE TO BOTH RED/WHITE (24) AND GREEN/WHITE (23) ZONE QUESTIONS INDICATES CONFUSION BY SUBJECT REGARDING ONE OR BOTH INSIDE-ISSUE QUESTIONS.	Q3	REVIEW WITH SUBJECT BOTH RED/WHITE AND GREEN/WHITE ZONE QUESTIONS TO ASSURE COMPLETE UNDERSTANDING, AND SIMPLIFY WORDING OF QUESTION(S) IF NECESSARY.
	25	26	B	B	25	26	NA	Q4	RESPONSE TO ONE OR BOTH BLACK ZONE QUESTIONS (25 & 26) INDICATES OUTSIDE ISSUE BOTHERING SUBJECT DUE TO MISTRUST OF POLYGRAPHIST.	Q4	POLYGRAPHIST MUST GAIN SUBJECT'S CONFIDENCE REGARDING AVOIDANCE OF UNREVIEWED QUESTIONS EMBRACING OUTSIDE ISSUE.
R	46	33	G	R	46 (mild)	33 (mild)	0	R1	MILD RESPONSE TO RED ZONE QUESTION (33) AND EQUAL MILD RESPONSE TO GREEN ZONE (46) USUALLY INDICATES SERIOUS GREEN ZONE DEFECT; UNLESS THERE IS STRONG RESPONSE TO RED/WHITE ZONE (24), THEN REFER TO REACTION COMBINATION (S).	R1	ADMINISTER STIMULATION TEST. IF ALREADY ADMINISTERED, INCREASE INTENSITY OF GREEN ZONE QUESTION (46) BY REVIEWING GREEN ZONE QUESTIONS ONLY BEFORE NEXT CHART; IF UNPRODUCTIVE, CHANGE GREEN ZONE QUESTION BY ALTERING AGE CATEGORY OR SCOPE OF GREEN ZONE QUESTION.
	47	35	G	R	47 (mild)	35 (mild)	0	R2	MILD RESPONSE TO RED ZONE QUESTION (35 AND EQUAL MILD RESPONSE TO GREEN ZONE (47) USUALLY INDICATES SERIOUS GREEN ZONE DEFECT; UNLESS THERE IS STRONG RESPONSE TO RED/WHITE ZONE (24), THEN REFER TO REACTION COMBINATION (S).	R2	REMEDY THE SAME AS (R1) ABOVE.
	23	24	G/W	R/W			0	R3	LACK OF RESPONSE TO GREEN/WHITE (23) AND RED/WHITE (24) ZONE INDICATES NO FEAR OF ERROR IS DAMPENING GREEN ZONE (46 & 47) AND FEAR OF DETECTION TO RED ZONE (33&35) NOT RECHANNELED INTO HOPE OF ERROR (24).	R3	NO REMEDY REQUIRED. NO EVIDENCE OF INSIDE ISSUE DAMPENING GREEN OR RED ZONES.
	25	26	B	B			NA	R4	LACK OF RESPONSE TO BOTH BLACK ZONE QUESTIONS (25 & 26) INDICATES NO OUTSIDE ISSUE BOTHERING SUBJECT DUE TO MISTRUST OF POLYGRAPHIST.	R4	NO REMEDY REQUIRED. SUBJECT APPEARS CONVINCED POLYGRAPHIST WILL NOT ASK UNREVIEWED QUESTION DURING EXAMINATION.

COMBO	ZONES OF COMPARISON		COLOR CODE		PRESENCE OF REACTION		SCORE		INDICATION		REMEDY
S	46	33	G	R		33	-1 to -9	S1	RESPONSE TO RED ZONE QUESTION (33) AND LACK OF RESPONSE TO GREEN ZONE (46) INDICATES DECEPTION TO RELEVANT QUESTION.	S1	NO REMEDY REQUIRED. RED ZONE QUESTION IDEALLY FORMULATED; FUNCTIONING AS DESIGNED.
	47	35	G	R		35	-1 to -9	S2	RESPONSE TO RED ZONE QUESTION (35) AND LACK OF RESPONSE TO GREEN ZONE (47) INDICATES DECEPTION TO RELEVANT QUESTION.	S2	NO REMEDY REQUIRED. RED ZONE QUESTION IDEALLY FORMULATED; FUNCTIONING AS DESIGNED.
	23	24	G/W	R/W		24	-1 to -9	S3	RESPONSE TO RED/WHITE ZONE (24) AND LACK OF RESPONSE TO GREEN/WHITE ZONE (23) INDICATES SUBJECT HOPES ERROR WILL BE MADE REGARDING RED ZONE QUESTIONS (33&35) INDICATING DECEPTION REGARDING TARGET ISSUE.	S3	NO REMEDY REQUIRED. RED/WHITE (24) AND GREEN/WHITE (23) QUESTIONS IDEALLY FORMULATED AND FUNCTIONING AS DESIGNED. RESPONSE TO RED/WHITE (24) QUESTION IN ADDITION TO RED ZONE QUESTIONS (33&35) PROVIDES FURTHER PSYCHOPHYSIOLOGICAL EVIDENCE OF DECEPTION REGARDING TARGET ISSUE.
	25	26	B	B			NA	S4	LACK OF RESPONSE TO BOTH BLACK ZONE QUESTIONS (25 & 26) INDICATES NO OUTSIDE ISSUE BOTHERING SUBJECT DUE TO MISTRUST OF POLYGRAPHIST.	S4	NO REMEDY REQUIRED. SUBJECT APPEARS CONVINCED POLYGRAPHIST WILL NOT ASK UNREVIEWED QUESTION DURING EXAMINATION.
T	46	33	G	R		33	-1 to -9	T1	RESPONSE TO RED ZONE QUESTION (33) AND LACK OF RESPONSE TO GREEN ZONE (46) USUALLY INDICATES DECEPTION TO RELEVANT QUESTION. THIS RULE NULLIFIED BY GREEN/WHITE ZONE (23) RESPONSE INDICATING SUBJECT FEAR OF ERROR REGARDING TARGET ISSUE.	T1	ADMINISTER STIMULATION TEST TO REASSURE SUBJECT OF ACCURACY OF TEST. IF ALREADY ADMINISTERED, THEN REVIEW BOTH INSIDE-ISSUE QUESTIONS (23 & 24) WITH SUBJECT TO INSURE UNDERSTANDING AND SUBJECT CONFIDENCE. FURTHER REVIEW GREEN ZONE QUESTIONS (46 & 47) ONLY WITH SUBJECT.
	47	35	G	R		35	-1 to -9	T2	RESPONSE TO RED ZONE QUESTION (35) AND LACK OF RESPONSE TO GREEN ZONE (47) USUALLY INDICATES DECEPTION TO RELEVANT QUESTION. THIS RULE NULLIFIED BY GREEN/WHITE ZONE (23) RESPONSE INDICATING SUBJECT FEAR OF ERROR REGARDING TARGET ISSUE.	T2	REMEDY THE SAME AS (T1) ABOVE.
	23	24	G/W	R/W	23		+1 to +9	T3	RESPONSE TO GREEN/WHITE ZONE (23) AND LACK OF RESPONSE TO RED/WHITE ZONE (24) INDICATES FEAR OF ERROR REGARDING RED ZONE QUESTIONS (33&35) MAKING RED ZONE QUESTIONS UNDULY THREATENING.	T3	REMEDY THE SAME AS (T1) ABOVE. IF (T1) REMEDY INEFFECTIVE, INCREASE INTENSITY OF GREEN ZONE QUESTIONS (46 & 47) BY ALTERING AGE CATEGORY OR CHANGING SCOPE OF GREEN ZONE QUESTIONS.
	25	26	B	B			NA	T4	LACK OF RESPONSE TO BOTH BLACK ZONE QUESTIONS (25 & 26) INDICATES NO OUTSIDE ISSUE BOTHERING SUBJECT DUE TO MISTRUST OF POLYGRAPHIST.	T4	NO REMEDY REQUIRED. SUBJECT APPEARS CONVINCED POLYGRAPHIST WILL NOT ASK UNREVIEWED QUESTION DURING EXAMINATION.
U	46	33	G	R	46		+1 to +9	U1	RESPONSE TO GREEN ZONE QUESTION (46) AND LACK OF RESPONSE TO RED ZONE (33) INDICATES TRUTHFULNESS TO RELEVANT QUESTION.	U1	NO REMEDY REQUIRED. RED ZONE QUESTION IDEALLY FORMULATED; GREEN ZONE FUNCTIONING AS DESIGNED.
	47	35	G	R	47		+1 to +9	U2	RESPONSE TO GREEN ZONE QUESTION (47) AND LACK OF RESPONSE TO RED ZONE (35) INDICATES TRUTHFULNESS TO RELEVANT QUESTION.	U2	NO REMEDY REQUIRED. RED ZONE QUESTION IDEALLY FORMULATED; GREEN ZONE FUNCTIONING AS DESIGNED.
	23	24	G/W	R/W		24	-1 to -9	U3	RESPONSE TO RED/WHITE ZONE (24) AND LACK OF RESPONSE TO GREEN/WHITE ZONE (23) USUALLY INDICATES SUBJECT HOPES ERROR WILL BE MADE REGARDING RED ZONE QUESTIONS. BUT PRESENCE OF RESPONSE TO GREEN ZONE QUESTIONS (46 & 47) AND LACK OF RESPONSE TO RED ZONE QUESTIONS (33 & 35) INDICATES SUBJECT MAY BE CONFUSED BY WORDING AND/OR PURPOSE OF RED/WHITE ZONE QUESTION (24).	U3	REVIEW WITH SUBJECT BOTH GREEN/WHITE AND RED/WHITE ZONE QUESTIONS (23 & 24) TO INSURE SUBJECT UNDERSTANDS WORDING AND PURPOSE OF QUESTIONS.
	25	26	B	B			NA	U4	LACK OF RESPONSE TO BOTH BLACK ZONE QUESTIONS (25 & 26) INDICATES NO OUTSIDE ISSUE BOTHERING SUBJECT DUE TO MISTRUST OF POLYGRAPHIST.	U4	NO REMEDY REQUIRED. SUBJECT APPEARS CONVINCED POLYGRAPHIST WILL NOT ASK UNREVIEWED QUESTION DURING EXAMINATION.
V	46	33	G	R	46		+1 to +9	V1	RESPONSE TO GREEN ZONE QUESTION (46) AND LACK OF RESPONSE TO RED ZONE (33) INDICATES TRUTHFULNESS TO RELEVANT QUESTION.	V1	NO REMEDY REQUIRED. RED ZONE QUESTION IDEALLY FORMULATED; GREEN ZONE FUNCTIONING AS DESIGNED.
	47	35	G	R	47		+1 to +9	V2	RESPONSE TO GREEN ZONE QUESTION (47) AND LACK OF RESPONSE TO RED ZONE (35) INDICATES TRUTHFULNESS TO RELEVANT QUESTION.	V2	NO REMEDY REQUIRED. RED ZONE QUESTION IDEALLY FORMULATED; GREEN ZONE FUNCTIONING AS DESIGNED.
	23	24	G/W	R/W	23		+1 to +9	V3	RESPONSE TO GREEN/WHITE ZONE (23) AND LACK OF RESPONSE TO RED/WHITE ZONE (24) INDICATES FEAR OF ERROR REGARDING TARGET ISSUE; BUT LACK OF RESPONSE TO RED ZONE QUESTIONS (33 & 35) INDICATES FEAR OR ERROR NOT MAKING RED ZONE QUESTIONS (33 & 35) UNDULY THREATENING TO SUBJECT.	V3	ADMINISTER STIMULATION TEST. IF ALREADY ADMINISTERED; NO FURTHER REMEDY REQUIRED. RESPONSE TO GREEN/WHITE ZONE (23) AND LACK OF RESPONSE TO RED/WHITE ZONE (24) IN ADDITION TO RESPONSE TO GREEN ZONE (46 & 47) AND LACK OF RESPONSE TO RED ZONE (33 & 35) QUESTIONS PROVIDES FURTHER PSYCHOPHYSIOLOGICAL EVIDENCE OF TRUTHFULNESS REGARDING TARGET ISSUE.
	25	26	B	B			NA	V4	LACK OF RESPONSE TO BOTH BLACK ZONE QUESTIONS (25 & 26) INDICATES NO OUTSIDE ISSUE BOTHERING SUBJECT DUE TO MISTRUST OF POLYGRAPHIST.	V4	NO REMEDY REQUIRED. SUBJECT APPEARS CONVINCED POLYGRAPHIST WILL NOT ASK UNREVIEWED QUESTION DURING EXAMINATION.

QUADRI-ZONE REACTION COMBINATION

COMBO	ZONES OF COMPARISON		COLOR CODE		PRESENCE REACTION		SCORE		INDICATION		REMEDY
W	46	33	G	R			0	W1	LACK OF RESPONSE TO RED ZONE QUESTION (33) INDICATES TRUTHFULNESS REGARDING TARGET ISSUE BASED ON ASSUMPTION SUBJECT CAPABLE OF RESPONSE; BUT LACK OF RESPONSE TO GREEN ZONE QUESTION (46) AS WELL, INDICATES SERIOUS GREEN ZONE DEFECT, OR INCAPACITY OF SUBJECT TO RESPOND TO EITHER QUESTION ZONE FOR REASON(S) TO BE DETERMINED BY POLYGRAPHIST.	W1	FIRST, ADMINISTER STIMULATION TEST TO DETERMINE SUBJECT CAPABILITY OF RESPONSE. SECOND, INCREASE INTENSITY OF GREEN ZONE QUESTION (46) BY ALTERING AGE CATEGORY OR CHANGING SCOPE OF GREEN ZONE QUESTION. IF ABOVE REMEDY FAILS TO PRODUCE DESIRED RESPONSE, A URINE SPECIMEN MAY BE OBTAINED FROM SUBJECT TO DETERMINE THE PRESENCE OF ANY DRUG.
	47	35	G	R			0	W2	LACK OF RESPONSE TO RED ZONE QUESTION (35) INDICATES TRUTHFULNESS REGARDING TARGET ISSUE BASED ON ASSUMPTION SUBJECT CAPABLE OF RESPONSE; BUT LACK OF RESPONSE TO GREEN ZONE QUESTION (46) AS WELL, INDICATES SERIOUS GREEN ZONE DEFECT, OR INCAPACITY OF SUBJECT TO RESPOND TO EITHER QUESTION ZONE FOR REASON(S) TO BE DETERMINED BY POLYGRAPHIST.	W2	REMEDY THE SAME AS (W1) ABOVE.
	23	24	G/W	R/W			0	W3	LACK OF RESPONSE TO GREEN/WHITE (23) AND RED/WHITE (24) ZONE INDICATES NO FEAR OF ERROR IS DAMPENING GREEN ZONE (46 & 47) AND FEAR OF DETECTION TO RED ZONE (33 & 35) NOT RECHANNELED INTO HOPE OF ERROR (24).	W3	NO REMEDY REQUIRED. NO EVIDENCE OF INSIDE ISSUE DAMPENING GREEN OR RED ZONE.
	25	26	B	B			NA	W4	LACK OF RESPONSE TO BOTH BLACK ZONE QUESTIONS (25 & 26) INDICATES NO OUTSIDE ISSUE BOTHERING SUBJECT DUE TO MISTRUST OF POLYGRAPHIST.	W4	NO REMEDY REQUIRED. SUBJECT APPEARS CONVINCED POLYGRAPHIST WILL NOT ASK UNREVIEWED QUESTION DURING EXAMINATION.

STATEMENT OF STANLEY M. SLOWIK BEFORE THE HOUSE SUBCOMMITTEE ON LABOR-MANAGEMENT

Mr. Slowik.* Thank you, Mr. Chairman. My name is Stanley M. Slowik. I am instructor of business ethics at Metropolitan State College here in Denver, Colo. I am also the director of the Denver office of John E. Reid and Associates. John E. Reid and Associates is a Chicago-based firm, internationally recognized in the polygraph field. I am also a member of the American Polygraph Association and the Colorado Association of Polygraph Examiners. I have a license in the State of Illinois from their Department of Registration and Education as a Detection of Deception Examiner.

Since April of 1976, John E. Reid and Associates assumed administration of polygraph examinations for Coors industries here in Colorado. We have also conducted polygraph examinations over the last 35 years for virtually every type of American business as well as the military, courts, professional associations such as the American Medical Association, unions, and governmental agencies.

One of our clients is the Stout Street Foundation, which is a program, a half-way house, for the exoffender. Through Coors, we do polygraph examinations for the National Alliance of Businessmen; again, hire the excon. If it wasn't for the polygraph test, these exoffenders would not be getting employment.

I would like this morning to describe briefly the procedures that --

Mr. Thompson.** May I ask you a question? Getting employment with Coors or anyplace else?

Mr. Slowik. Well, in the case of an NAB program with Coors. In the case of the Stout Street Foundation, they employ internally. They run I believe a gas station and a laundromat, et cetera. So it is a self-entity. The exoffenders live there as a matter of fact.

This morning I would like to briefly describe the procedures we follow when we administer polygraph examinations and particularly preemployment polygraph tests. I also wish to briefly address the need for polygraph in the employment field and why employees and job applicants should and can be protected from any abuses or misuse of the polygraph test.

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*Stanley M. Slowik is a Member of the American Polygraph Association in Denver, Colorado. His testimony took place before the Subcommittee on Labor-Management Relations of the Committee on Education and Labor, House of Representatives, Ninty-Sixth Congress, First Session, held in Denver, Colorado, on December 15, 1979. His testimony appears in Volume III of Pressures in Today's Workplace, pp. 55-69. His exhibits appear on pp. 355-447.

**Mr. Thompson, who is among the questioners, is no longer a Member of Congress. He has been convicted of bribery as a results of the ABSCAM investigations.

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With practical and sensible regulatory legislation, laws which completely ban the use of the polygraph in the employment field are not necessary, are increasing prices to consumers and adding to inflation.

To begin with, I would like to state that the polygraph examiner, not the polygraph instrument, makes the evaluation of the subject's truthfulness or deceptiveness in answering certain questions in the polygraph test. Polygraph examiners' evaluations are based upon the subject's cardi-vascular and respiratory activity as measured by the polygraph instrument and shown on a chart passing through that instrument.

The polygraph instrument only shows changes in the physiology. It does not show whether the subject is telling the truth or lying. Whether he is truthful or deceptive is the evaluation of the examiner.

The probability of that evaluation being correct is dependent upon the examiner's education, training, techniques, and experience. Our studies show that the evaluations made by a properly educated, trained, and experienced examiner using an acceptable technique is correct in over 90 percent of the examinations. In about 10 percent of the tests, the examiner is unable to make an evaluation because the subject is not suitable for testing. Acute nervousness, for example, can cause an inconclusive test. Nervousness cannot be misinterpreted, however, as deception.

I would like to make it clear that preemployment polygraph examinations are diagnostic in nature and nonaccusatory. We require that all of our clients in the private sector discuss with us and agree upon all the areas to be inquired on the test. We refuse, and will continue to refuse, to inquire into such topics as the applicant's sexual behavior, religious beliefs, union affiliation, political affiliation, political inclination, or any other area that is not specifically related to the client's business and the particular job opening.

Most complaints about preemployment polygraph examinations are not complaints about polygraph per se but improper areas of inquiry. Such complaints can be made with respect to written examinations, personnel interviews, psychological tests, and other preemployment selection devices.

I can state unequivocally that since we have performed polgyraph examinations for Coors industries, no applicant has been asked any question regarding sexual preferences or any improper or irrelevant area. In addition to relevancy, we insist that all areas of inquiry be nondiscriminatory and limited in time and scope.

It is not the purpose of the preemployment polygraph examination to determine if someone is guilty or innocent. It is not the purpose to find out if someone has ever done anything wrong at any time in his or her life. The purpose is simply to determine if the applicant's behavior to relevant, nondiscriminatory areas of inquiry meet the minimum standard of acceptability preestablished by the prospective employer. Thus, no applicant is ever disqualified simply because he has stolen from the present or previous employer in the last 12 months. Rather, because he has stolen more than the acceptable limit the prospective employer has established.

Prior to the applicant's arrival at our polygraph laboratory, he or

she completes a written application and is orally interviewed by the prospective employer. In the case of Coors industries, all areas of inquiry on the polygraph tests are first covered in depth on the written application or oral interview or both. The applicant is furnished with a list of specific area of inquiry which he agrees will be covered on the polygraph test.

At the time of the examination, and prior to the actual test, the polygraph examiner again reviewed each question with the applicant. Usually only five or six areas are covered.

Typical areas of inquiry would cover thefts of merchandise from previous employers in the last 12 months; thefts of money from previous employers in the last 12 months; involvement in or commission of serious criminal acts within the last 12 months; use of marihuana, narcotics, or dangerous drugs illegally on a job during working hours in the last 12 months; and abuse of alcoholic beverages on the job during working hours during the last 12 months.

There are never any trick or surprise questions. The applicant is given ample opportunity to refuse to take the test, refuse to answer any questions, clarify and discuss any question, and decline to continue with the testing.

The applicant is then given a series of at least two polygraph tests for consistency purposes, and an evaluation is made by the examiner of the applicant's truthfulness or deceptiveness into each of his or her answers. If the test indicates deception, the applicant is given an opportunity to make an explanation or to clarify his or her answers, if he or she desires. The examiner then makes a report to the prospective employer, a copy of which is given to the applicant without charge upon his or her request.

All polygraph charts, question sheets, release forms, and reports are destroyed within a reasonable period of time unless a particular State licensing law requires retention for a greater period of time. It serves no purpose to retain such material as all questions are limited in time and, therefore, become irrelevant as we evaluate only the recent past, not lifetimes. The results are strictly confidential and used only for job evaluation and never released to anyone other than the prospective employer and the job applicant.

Finally, three studies were conducted in 1971, 1977, and 1979 on job applicants that is, individuals who actually had preemployment polygraph examinations. Averaging the percentages shown in these studies, 89.3 percent thought the test was fair, 85.5 percent did not feel that the test in any way invaded their privacy, 94.5 percent were willing to take such tests in the future to get a job, and 97.9 percent were willing to take a test to find thieves at their place of employment. It should be noted that all of these surveys included applicants who were and were not recommended for employment based on their polygraph results.

Polygraph examiners are sensitive to the fact that abuses can occur with polygraph examinations. While the great majority of polygraph examiners are competent and ethical, there are always a few who cannot measure

up to the appropriate standards. We recognize that. Voluntary organizations, such as the American Polygraph Association and the Colorado Association of Polygraph Examiners, cannot, by themselves, totally prevent abuses in the field any more than the American Bar Association or the American Medical Association can prevent misconduct or malpractice on the part of their respective members.

We have, therefore, encouraged State licensing of polygraph examiners to insure their competency or ethical conduct. There are presently 23 States which license polygraph examiners, and we would like to see a licensing statute in all 50 States. Colorado, unfortunately, has no licensing law.

By the same token, while the vast majority of employers properly utilize polygraph examinations to screen applicants for employment and control internal theft, there are always a few who attempt to misuse this testing procedure. A number of States have restricted and, in some cases, prohibited employers' use of polygraph examinations. We do not believe such laws are necessary or fair.

In those States where employers are prevented from using the polygraph, it is much more difficult, if not impossible, to control internal theft with the result that many more businesses charge higher prices for their products or services. It is ultimately the consumer who pays for employee theft. In these days of increasing inflation, efforts should be made to reduce prices rather than increase them.

Accordingly, we propose an alternative to banning polygraph examinations in the preemployment field. That alternative is practical and sensible regulation. I would encourage and support legislation which would do the following to protect employees and job applicants: Insure that only specific areas which are directly related to the employer's business and the job in question can be inquired into by an employer on the polygraph examination and any other selection method; limit the time and scope of the inquiry to the recent past and not an entire lifetime; prevent the employer from asking questions as to sexual matters unless critical to the job; prevent the employer from asking questions about union affiliation, political and religious beliefs, or other highly personal matters; protect the employee, or job applicant, from employers releasing information from a polygraph examination to third parties without his or her consent unless properly subpenaed in a court proceeding.

At this time, Mr. Chairman, I'd like to take advantage of your offer to submit supplemental information at a later time. If you'd like Mr. Fochtman to speak at this time or answer questions, I'm happy to follow with your wish.

Mr. Thompson. Well, if we have time, we'll give him an opportunity since he's come this far on his own. But I'd like to ask you something. Do you have any knowledge to refute the testimony we heard earlier as to the nature of the tests described by our witnesses?

Mr. Slowik. I can say that since we began doing any testing for Coors since April 1976, unequivocally, we have never asked any of those questions, period, nor have we ever done that with any of the other

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clients in the private sector in 35 years of practice.

Mr. Thompson. Are you authorized to speak for Coors concerning the testimony which we have heard?

Mr. Slowik. Yes; as far as the practice of polygraph as we do the tests of Coors. So anything that has been done with the polygraph since we've been doing the tests, I can answer completely.

Mr. Thompson. Do you know what's become of the company that administered the test prior to 1976?

Mr. Slowik. I believe they're still practicing polygraph in this State.

Mr. Thompson. What company was that?

Mr. Slowik. I believe it was known as Factfinders.

Mr. Thompson. Has Coors ever made any statements concerning the practices of the testing company at Coors before you?

Mr. Slowik. I'm sorry, sir? Could you repeat that?

Mr. Thompson. Has Coors ever, to you, made any statements concerning the practices of the previous company which did this work for them?

Mr. Slowik. Nothing specific, sir.

Mr. Thompson. Do you have or would you be able to submit to us a copy of any contractual agreement, which you have with Coors describing the exact parameters of your testing procedures and questions?

Mr. Slowik. We do have a contract with Coors. I'm not quite sure if it addresses that point specifically. But I would be happy to give you a copy of our contract with Coors. We have an arrangement, an oral agreement, as to what is going to be covered on the polygraph test. And we, of course, do comply with the exact same --

Mr. Thompson. Could you reduce that oral agreement to writing, have it notarized, and send it to us?

Mr. Slowik. Sure.

Mr. Thompson. How accurate, roughly speaking, is the polygraph?

Mr. Slowik. Well, it's a little bit like asking, compared to what?

Mr. Thompson. That's what worries me.

Mr. Slowik. I recently became the first polygraph examiner in the State of Colorado to have polygraph testimony accepted in a criminal court over the objection of opposing counsel. The statistics or the studies can be roughly divided into two groups: Studies involving experimental subjects--these are usually done by universities, et cetera--and studies done with real-life situations. Each has its own advantage and disadvantage.

With the experimental situation, what's known as ground truth is clearly established. You, without telling me, decide who's going to be the truthful people, who's going to be the untruthful people. Then you send them to me, and I'm supposed to determine with the polygraph, the truthful from the untruthful--my opinions to be compared to your previously established classifications.

The problem with that system, of course, is it's a little bit like gamesmanship. The motivation involved isn't for real. But you know in reality who's right, who's wrong. In real-life cases, especially preemployment testing, it's very difficult sometimes to know ground truth. It's very easy to be persuaded by opinion, "I didn't do this," and yet if there's no way of knowing if he did or didn't, you have nothing to compare people with.

Now, what we do have, however, is what's known as verified case charts. We'll go into a bank, for example, under the auspices of the FBI or the bank itself, and we'll test 10 tellers suspected of stealing $1,000. In our opinion, nine and a half--

Mr. Thompson. In the last 10 months? Anything else they ripped off before that, that's OK?

Mr. Slowik. This is a specific-issue testing. These would be specific employees of the bank and testing them on a single, specific issue.

Our opinion will say that nine are telling the truth when they deny stealing the money; one is not telling the truth; when she denies it. We will confront that one individual who did not pass the test. And referring to the verified cases, she admits her wrongdoing. That confession, in turn, is substantiated with physical evidence. They go to her house, recover the money, the bank gets it back, et cetera. So the physical evidence substantiates the confession, the confession substantiates the original diagnosis of the polygraph examiner.

What you do, then, is get a bunch of polygraph examiners who don't know anything at all about the case, and you give them the charts. Blind-chart interpretations is what it's called. They don't have access to the actual individuals being tested; they don't even know what the case was about or what the test questions were, et cetera. Under those circumstances, we can demonstrate validity and reliability in the area of about 90 percent. Studies range, the more firm studies --

Mr. Thompson. That's what I'm getting to. I'd like to decide-because I'd like to be as fair as possible with respect to this-on the basis of empirical scientific data, some evidence-and I use the word "empirical" advisedly-as to the validity and the reliability of polygraph tests. If you have any information which might help us in that regard, it would be useful; for instance, about tests, scientific studies, in the criminal context or in the employment context.

Mr. Slowik. There are numerous of them, Mr. Chairman; for example, one done in conjunction with Dr. Horvath, who is professor of criminology at Michigan State University, and a Professor Widacki, at a university in Poland, compared the respective validities and reliabilities of polygraph,

fingerprint analysis, handwriting analysis, and eyewitness identification. Polygraph validity matched or exceeded those commonly accepted forms of criminal evidence.

There was a whole series of studies done by Drs. Barland, Raskin, Hare, et cetera, which clearly indicate that, again, using a well-qualified, educated examiner who is also using proper polygraph technique can achieve extremely high degrees of reliability. And the most recent study, and the only study that I've ever seen done on preemployment validity reliability-I just read it on the way here-it was done by two researchers in Georgia, indicates in the preemployment context it's 100 percent accurate. We don't claim that. I don't see how they could have done it. They used an experimental design. But the results were 100 percent reliability.

Mr. Thompson. Were they the questioners for Billy's beer?

Mr. Slowik. Well, in response to that, our firm also has applied polygraph testing for other major brewers in the United States besides Coors.

Mr. Thompson. Which others?

Mr. Slowik. I'd like to hold off until I can document specific ones at this time. In my supplemental statements--

Mr. Thompson. With respect to the confidentiality aspects of this, what guarantees are there in your agreement with Coors that the record will be kept confidential with respect to the applicants, whether they are accepted or not accepted, and will not be given to any third person?

Mr. Slowik. Again, I don't have the Coors contract in front of me today. I could provide that to you. But I do recall that that is a specific condition of the contract, that we are to maintain those records in absolute and strict confidentiality. And we do this simply by destroying them after a period, a reasonable period, of time.

Mr. Thompson. You mentioned the ability of the operator who you say, in your statement, makes the final judgment, not the machine itself.

Mr. Slowik. There's never been a machine that does that.

Mr. Thompson. There never having been a machine which is capable of doing that, it becomes a judgment matter by the operator?

Mr. Slowik. Well, a polygraph instrument is like the thermometer that the doctor uses to decide if you have appendicitis. It's like the typewriter that the journalist uses to make his publication.

Mr. Thompson. I'd hate to go to a doctor who makes a diagnosis of appendicitis on the basis of a thermometer.

Mr. Slowik. It's used to determine your temperature. It's part of the fact-gathering information that he does in reaching a conclusion that you are or are not sick.

The polygraph instrument itself is a medical recording device. It merely records changes in your physiology in a graphic manner. It doesn't think, analyze, or diagnose any more than an electrocardiogram tells us--it's the operator who makes the decision.

Mr. Thompson. What are the qualifications to be a polygraph expert?

Mr. Slowik. In the State of Colorado? Absolutely none. In the State of Illinois where I am licensed--

Mr. Thompson. So anybody could come in here if they can get a contract, qualified or not?

Mr. Slowik. Mr. Chairman, I've tried strenuously in two separate sessions to get a licensing act. Incompetent examiners kill us more than you may realize--and believe it, we are acutely aware of it. We have no control. The most we can do is kick them out of the Colorado Association of Polygraph Examiners.

Mr. Thompson. Tell us, what degree of competence would you use or what qualifications would you use to determine whether or not a person should remain a member of your association?

Mr. Slowik. They are quite long and involved. Again, I'd like to include that. They are in a code of ethics and the charter, the constitution, of the Colorado Association of Polygraph Examiners. Without getting very specific, there would be certain high levels of education requirements, certain levels of college or more, certain number of specific clock hours, specific training in psychology, physiology, chart interpretation, and other fields that relate to polygraphs. It's a rather lengthy document. And, again, I can supply that to you. The American Polygraph Association also has very specific guidelines on what should or shouldn't be asked and how the examiner should run this test as well as what the qualifications should be, but they are quite extensive.

Mr. Thompson. I think I've used more than my 5 minutes, so I'll yield to my colleague from Colorado, Mr. Kramer.

Mr. Kramer. Thank you, Mr. Chairman. Mr. Slowik, can you give us some idea of the numbers or percentages of people that are involved in polygraph testing by the Coors Co.? You have done their polygraphing exclusively since 1976, if I understand your testimony.

Mr. Slowik. When we signed the contract in April of 1976, we were not the exclusive polygraph firm. They were infact for some period after April of 1976 using another firm in addition to us. At this time I can state that we are exclusive, having contacted Coors before coming here today. I asked them that question. We are now the exclusive polygraph firm for Coors.

Mr. Kramer. Do you know how long that would be?

Mr. Slowik. At least 2 years.

Mr. Kramer. Can you approximate how many people, or, at least, a

percentage of the number of people that were prospective employees who refused to take the test?

Mr. Slowik. Prior to their coming to our laboratory, I would have no knowledge of that, no.

Mr. Kramer. Well, now that you are the exclusive giver of these tests, can you answer the question?

Mr. Slowik. What happens is the applicant applies at Coors in their employment center. We are not located at Coors. We have our separate office. We are an independent firm.

Mr. Kramer. So they're not sent out of the personnel office down the corridor or something?

Mr. Slowik. Yeah. We're separated by about 15 miles.

Mr. Kramer. Of those that take the test, do you have any idea of how many, either in direct numbers or as a percentage of all applicants, who are rejected for employment as a result of the tests that you administer?

Mr. Slowik. Based solely on the polygraph, I can tell you approximately what percentage. And here's when we get into some of the tough part about it. Because you have to understand that, as I mentioned in my talk, there are standards of what is considered to be acceptable behavior. And then, of course, there is the diagnosis of the polygraph.

We know, in the case of Coors for example, that approximately 70 to 80 percent of all applicants taking the polygraph test are recommended for employment.

Mr. Kramer. Is that by you?

Mr. Slowik. By us. Now, that is a combination of meeting the standards in the areas of inquiry, not exceeding the standards preestablished by Coors in the areas of inquiry, and in our opinion telling the truth. Of the remaining 20 to 30 percent, these are individuals who are not recommended for employment. And, again, that's a combination of individuals who, in our diagnostic opinion, are not telling the truth and/or making a volutarry admission that exceeds preestablished standards.

Now, we do know, looking at just the not-recommended category, that 95 percent of the individuals who are not recommended for employment are not recommended because they give us a disqualifying admission, because the fellow says he does use heroin, $100-a-day worth of heroin, every day. That exceeds their standards. That is why he is not recommended.

However, that information may have only been obtained because the examiner asked him all these questions, gave him ample opportunity to tell us this, he lied, and he failed the test, and then the examiner says, "You didn't pass this question." and then he admits its use. In other words, these admissions aren't suddenly coming forward. It's usually after a person is diagnosed in a specific area and then admits it.

Mr. Kramer. What kind of information do you send them? Do you send them a work report in terms of analysis or the applicants responses to specific questions? Or, do you just basically give them a general opinion that you do not recommend, or do recommend the person for employment?

Mr. Slowik. The only thing we send them through the mails is a general form stating that this individual is recommended, is not recommended, or is recommended qualified for employment. We do not, never have, included the actual admissions in any written form. Because we feel if those admissions fell into some improper hands, got lost in the mail, et cetera, it would be very harmful. We are firmly committed to using the results of these tests only for preemployment evaluation.

Mr. Kramer. So the company has no idea whatsoever as to what the basis is for your recommended rejection.

Mr. Slowik. They know that, because there is an oral report to authorized people immediately after the test. In other words, you can't have the applicant fooling around for weeks until he found out how he did on the test. He wants to know; the company wants to know. So an oral report is given to authorized individuals alone. And only those admissions that are disqualifying admissions--in other words, if an individual voluntarily blurts out some indiscretion, that isn't included in any oral report. And no admissions are included in any written report.

Mr. Kramer. We have had some testimony about the extent, nature, and use of polygraph testing after employment has taken place as a means of controlling employees. The inference from the testimony is that the polygraph is used as a means of, keeping employees in line. Have you been, for the last 2 years, the exclusive firm that would be involved in postemployment polygraph testing?

Mr. Slowik. The testing of actual employees?

Mr. Kramer. Polygraph.

Mr. Slowik. I can't say if we're exclusive. We have done some of that testing; yes. We have tested people who are current employees of the Coors Co.

Mr. Kramer. Can you give us any idea of what kinds of situations develop into polygraph testing, what kinds of questions are asked by you when those questions are administered, and what happens to employees after the tests are given?

Mr. Slowik. All right. That is quite a different type of polygraph test than preemployment test. It's a serious error to try to confuse the two, either in purpose or in procedure. The procedure followed is what we call specific issue testing and is significantly different than the procedures followed in preemployment testing.

In specific issue testing, what must take place first of all is that an investigation be conducted, in your example by Coors. They have first of all determined is there a problem. Second, they have to give everybody--and this is strictly on their side--opportunity to explain or

discuss their involvement or noninvolvement of the issue under investigation. And, finally, only if there appears to be enough evidence to support the conclusion that an incident has occurred but not enough evidence to support a decision one way or another--only under those circumstances is the polygraph ever considered. And then, finally, only used as an investigative aid.

Since we've been doing that type of testing at Coors, I know of no incidents where any individual was ever fired solely on the basis of a polygraph examination.

Mr. Kramer. Can you give us some idea how widespread this testing is.

Mr. Slowik. In 3 years, if we have done 5 or 10 cases, 5 or 10 individuals tested, I'd be surprised if it was that many. Very few.

Mr. Kramer. Do you know how many employees they have?

Mr. Slowik. I understand somewhere in the area of 6,000 to 8,000.

Mr. Kramer. 68,000?

Mr. Slowik. No; 6,000 to 8,000. We run approximately 3,500 to 4,000 preemployment tests per year.

Mr. Kramer. Could you check and see whether or not you do that testing exclusively?

Mr. Slowik. Yes, sir, I could.

Mr. Kramer. I'd be interested in knowing exactly how many of these postemployment tests have been run.

Mr. Slowik. I could provide you with an accurate number of every test we have ever run.

Mr. Miller. Would the gentleman yield?

Mr. Kramer. Certainly.

Mr. Miller. You do exclusively the preemployment testing; is that correct?

Mr. Slowik. Since April of 1976, yes. And some of these internal investigation cases. As I said, in the 3 years we've been connected with Coors, if we've done 5 to 10 individuals in that whole period of time, I'd be surprised if it was that many. But I have no knowledge that they weren't using somebody else.

Mr. Miller. Do you have any knowledge that they are?

Mr. Slowik. No.

Mr. Miller. But your contract doesn't deal with the exclusivity?

Mr. Slowik. No. Our contract deals with preemployment.

Mr. Thompson. The Chair doesn't want to inhibit any questions. We would like to complete this hearing and have the last witness read his statement by 1 o'clock if possible.

Mr. Kogovsek. Thank you, Mr. Chairman.

Mr. Slowik, you stated that Factfinders--I think that was the name of the other firm that preceded you at Coors--

Mr. Slowik. Yes, sir.

Mr. Kogovsek [continuing]. Continues to operate in the State of Colorado.

Mr. Slowik. Yes, sir.

Mr. Kogovsek. And we can assume that the practices that we've heard testimony about earlier continue probably in some places in this State?

Mr. Slowik. I have no basis on which I can answer that, sir. I don't know if it's true or not, the allegations to begin with. I don't know if that firm, even, if it was engaged in that practice, is still engaged in that practice. We have never ever done that.

Mr. Kogovsek. Let me get something clear in my mind then. The testimony that we have heard from the people that preceded your testimony, the former employees and so on, were not put under a polygraph by anyone from your organization?

Mr. Slowik. As I understand, and I believe I've seen copies of their affidavits including the 12 that were not allowed to testify today, none of them dealt with us.

Mr. Kogovsek. I think you will admit that polygraphs are not an exact science, that there is room for error?

Mr. Slowik. Oh, yes, sir.

Mr. Kogovsek. For instance, if a prospective employee for Coors decided that he wanted to apply and he knew that he would have to go through some pretesting procedures, if he happened to drive 200 miles to take the test that morning, for some reason, he had some family problems or something that was bothering him and we might name two or three other things that might affect the test, would you have any way to take that into consideration?

Mr. Slowik. We definitely do. First of all, in the pretest interview, nobody is plunked down in the chair and we start firing off a bunch of questions, we cover his mental and emotional state within the limits and confines of determining subject suitability for testing. Second, when the test comes up inconclusive, as it sometimes does because of a mental, physical, or emotional aberration at the time of the test, the individual is given an opportunity for a reexamination. In addition to that, the

individual is given an opportunity for a reexamination. In addition to that, if the individual does not pass the test and challenges the results, he is also given a reexamination with another examiner, a different examiner. That's about 3 percent of the Coors applicants are reexamined. So there are alternatives available.

Mr. Kogovsek. You're sure in your own mind, Mr. Slowik, that you have probably not ever recommended someone because of your findings that should have been recommended for a job?

Mr. Slowik. Oh, I'm convinced in my mind. I, however, have some doubts about some individuals who may have been given jobs who probably shouldn't have.

But remember, the standards of the employer have a lot to do with what is recommended and not recommended. One of the most reliable ways to predicting future human behavior is recent, relevant investigation of the past. If you use $100-a-day worth of heroin every day until you apply for a job at Coors, in all probability you're going to use it tomorrow. Conversely, if you haven't engaged in that behavior in the last 12 months, it's very unlikely you're going to start tomorrow.

But none of those systems is absolutely perfect. A good fellow can go bad; a bad guy can become good. There's no absolute guarantee. But it's the most reliable way of predicting the future.

Mr. Kogovsek. You indicated that under some circumstances sexual preference or some questions about sex should be asked.

Mr. Slowik. Well, there are some extreme occupations.

Mr. Kogovsek. As far as Coors is concerned?

Mr. Slowik. As far as Coors is concerned, absolutely not. I couldn't dream of any position at Coors where that would be justified.

Mr. Miller. Would the gentlemen yield?

Mr. Kogovsek. Sure.

Mr. Miller. Given the affidavits and the testimony that we have received, how would you characterize the asking of those questions for preemployment applicants at Coors?

Mr. Slowik. At Coors I could not justify that. I'm strongly opposed to it. Our firm has always been opposed to that. We will turn down clients because they want us to ask questions that we feel are out of bounds as far as proper areas of inquiry.

Mr. Kogovsek. Is it possible that Factfinders still does postemployment work--

Mr. Slowik. I can't answer that, Congressman. I don't know.

Mr. Kogovsek. Do you use any other devices such as a voice analyzer?

Mr. Slowik. No. And we are strongly opposed to it.

Mr. Kogovsek. Why is that?

Mr. Slowik. First of all, it is the examiner and not the machine that makes the test valid and reliable. The proponents of these things imply that no training or examiner qualifications are required. Second, there's a possibility they can be used clandestinely without the knowledge or voluntary cooperation of the subject being tested. We are opposed to it in that respect. And, finally, the scientific data on it indicates that the validity and reliability even using a control-question technique is not very good.

Mr. Kogovsek. Do you get better and more accurate results if the subject is a firm believer in the polygraph as opposed to someone who--

Mr. Slowik. None whatsoever. As a matter of fact, Hare and Raskin did a study on psychopaths in prison, convicted felons who are also psychopaths, and it had no effect. We tested James Earl Ray on the assassination of Martin Luther King. The man has virtually no moral conscience at all. The test still shows clearly when he's not telling the truth.

We're not measuring your nervousness, your guilt feelings, your conscience, et cetera. That's not what the polygraph is all about.

Mr. Kogovsek. If you do some postquestioning, postemployment questioning--once again, I think we'll probably find out when we read your contract--but I assume you do not receive any kind of a premium for finding someone who has participated in a theft; or do you?

Mr. Slowik. Oh, absolutely not. What we charge is exactly the same fee, regardless of the outcome of the test.

Mr. Kogovsek. Thank you Mr. Chairman.

Mr. Miller. In your contract with Coors, are you required to give this preemployment test to all applicants for jobs at the facility in the Coors Co?

Mr. Slowik. We don't run their personnel department. We only run a polygraph test on individuals they send to us. In other words, it's possible, for example, that when the applicant completes the written application and oral interview at Coors, he may be eliminated there and never sent for polygraph testing. Perhaps a given job requires certain education levels and the fellow doesn't have it or he doesn't pass the physical examination. Then there's no need to go to the polygraph.

So how many people, how many of the different occupations at Coors, require the polygraph, I don't know. But my understanding is that everyone, after a certain point in the selection process, takes the polygraph tst. I know I've tested, for example, people applying for the job of company surgeon all the way down to people applying for part-time summer work in the brewery division. There doesn't seem to be any discrimination as to what position. But Coors would have that information.

Mr. Miller. That would be to executive officers, also?

Mr. Slowik. Oh, yes. Many Ph.D.'s and rather prominent individuals applying for jobs at Coors.

Mr. Miller. So if you're in contention for running as a vice president of Coors and you had jumped all the prequalification hurdles, you would have to take a polygraph?

Mr. Slowik. If you were applying for the job from the outside. if you were already working there and you were going for a promotion, no, you don't take the polygraph test as far as I know. They never send us anybody for those.

Mr. Miller. But a new employee at whatever level?

Mr. Slowik. At whatever level. Only Coors could answer that absolutely. But I have tested individuals applying for jobs at extremely high levels, director of marketing, director of this, director of that.

Mr. Miller. We have a problem here in the sense that we have had allegations made, affidavits submitted, and testimony submitted as to practices which apparently occurred prior to your engagement in this field with Coors. And I don't know how we deem a determination as to those allegations, because in fact you're not qualified to testify as to those. You've already testified that you found questions in certain categories that would not be relevant and were improper and you disagreed with asking those, given your knowledge of employment requirements at this facility. So I don't know if this industry is just choosing to ignore those or accepting that and saying that things have changed or not. I just leave that up in the air. Because, obviously, I've characterized them very strongly, and others have suggested it's not so.

We don't have a conclusive answer, Mr. Chairman. I don't know if we can direct a letter as to what the practice was either to the previous contractor or/and to the employer in this case. Because I think some clarification has to be made, because people have made statements to this committee. And, apparently, we don't have the ability to find out as to their validity or not. And I would--

Mr. Thompson. If the gentleman would yield? It's obvious this morning we don't have that ability. I would have to check the rules to see if it might be necessary to subpena someone having had to do with those things.

It's evident the present witness is saying that the practices are rather radically changed. And, certainly, he is not in a position to make a judgment as to the practices of his predecessor company. I would assume, that it would be reasonable to presume the Coors Co. since 1976 has decided in a sense to clean up its act, if we're being told the facts.

Mr. Miller. What is your professional impression of the--what would appear, at least at one time, may still be the practice in this case or other employers, of the continued reassertion of the threat of spot polygraph tests in regard to various action by employees of suspected actions in terms of the workplace?

Mr. Slowik. We're perhaps a little bit off by ourselves on our feelings about this. We do not feel that anybody should be given a polygraph examination--we're talking about current employees right now--unless, No. 1, prior investigative means have determined whether you do have a valid issue to begin with, you're not dealing with hearsay or somebody thinks that somebody is smoking dope somewhere back there, no; No. 2, the investigation has failed to resolve itself, in other words, you know you have a problem but you don't know which of this group of people are responsible; No. 3, that the issue is paramount, it's important to the health, safety, welfare not only of the business but all of the employees; and No. 4, that everybody is voluntarily willing to take the test. Under no circumstances will we ever agree to give anyone a polygraph test unless they voluntarily agree to take the test.

We do not believe in the form of mandatory polygraph testing; is that what you're saying? "Every 6 months, no matter what happened, you've got to go through"--

Mr. Miller. You've opened up the subject because there have been numerous Supreme Court determinations and rejections and acceptance of the word "voluntary." As we know, Mr. Miranda had some concern about whether he was voluntary or involuntary, some criminal cases. Do you consider it voluntary if a person has already been fired and is told this is a manner in which they could get their job back or is under threat of being fired but this is a manner in which they can continue on the job?

Mr. Slowik. As you said, this is a can of worms that, believe me, I would love to address, but I would love to put it in my supplementary statement, because this goes on forever. For example, all the constitutional guarantees, privacy, the fifth amendment, et cetera, there has never been a Supreme Court ruling saying that a polygraph test violates any of these things. In fact, the challenges on those points have all been denied as without merit.

Mr. Miller. Let me get clarification here. That's not the issue.

Mr. Slowik. I would be happy to respond in detail--

Mr. Miller. The issue is the voluntarism of the person who submits to it, not the question of whether the exam in and of itself invades that privacy for the purpose of this question, but the question of whether or not you voluntarily submit to it when you're under some form of duress as to your livelihood.

Mr. Slowik. I would say it's as voluntary as you driving to your dentist for tooth decay; you don't want to do it, but you have to.

Mr. Miller. No. Let me ask you, are all of your employees licensed in the State of Illinois?

Mr. Slowik. Yes, they are.

Mr. Miller. So you hire people and they're sent out here for purposes of filling this contract?

Mr. Slowik. Yes, they work here.

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Mr. Miller. So when you've given five or six of these spot exams at this facility, you ask the person at this point whether or not they're here under their own free will?

Mr. Slowik. We not only ask it, we require that they do state in writing before each test begins.

Mr. Miller. After one of those examinations takes place, or even in the case of the preemployment examination, certain records are kept and certain recrods aren't kept. You mentioned that no written record of the response of the individual is kept.

Mr. Slowik. Right.

Mr. Miller. An oral dialog is carried on with the employer as to certain things that were said for that person to make a determination. What happens if I and my attorney, want to challenge, and see the questions that were asked and a transcript of my responses, and have my own polygraph person come in and say whether that's within the bounds of acceptability or not?

Mr. Slowik. In Illinois, for example, and in the other 23 States that--well, we follow our practices here. Even though we're not required by law in Colorado to do this, we do what we do in Illinois. So we do keep the polygraph records, the polygraph question sheet--this is the sheet the polygraph examiner uses to read the question--which, of course, also has the applicant's answers, his explanations and responses, et cetera.

Mr. Miller. A written record--I misunderstood earlier--is in fact kept?

Mr. Slowik. No. There is no written report mailed to the client with the applicant's admissions.

Mr. Miller. But a transcript of that activity is kept of the test?

Mr. Slowik. Yes.

Mr. Thompson. If the gentleman will yield? I gathered from an earlier answer that the conclusion of an operator on the basis of which he makes an oral report is not kept in writing. Am I correct?

Mr. Slowik. Not exactly. The material from which the examiner uses to base his decision--

Mr. Thompson. I understand that. And the answers?

Mr. Slowik. And the answers.

Mr. Thompson. But, as you say, the machine itself doesn't make the ultimate decision; the operator does? The operator makes a determination, recommends orally to Coors that they should hire or not hire the person?

Mr. Slowik. Right.

Mr. Thompson. Presumably, they're asked the reason why or why not.

Mr. Slowik. Right.

Mr. Thompson. Are there conclusions and the reasons therefore reduced to writing and kept and made available to the client?

Mr. Slowik. They are on the original note, yes, on the question sheet. All that material is there, but it's destroyed after a reasonable period of time. We do keep it for that very reason. And in States that have licensing laws, you're required to keep it for that reason, so that an independent observer could step in and see if there was an abuse. The polygraph charts are kept.

Mr. Miller. And the transcript of the answers and the questions?

Mr. Slowik. Yes. As well as all the admissions, because those are the answers. But all that is destroyed after a period. And, of course, the overall recommendation is there, too.

Mr. Miller. Do you give polygraph tests to your polygraph testers?

Mr. Slowik. Nobody is allowed into our school, which is the only college of polygraph, without taking a polygraph test. And all our employees, of course, come from our schools, so they all take polygraph tests.

Mr. Miller. So in your mind there is a reasonable, insurance a person who now lives in this community and is interviewing people in this community would not use that information against that individual in some other fashion?

Mr. Slowik. Oh, absolutely not.

Mr. Miller. It would never happen?

Mr. Slowik. Never.

Mr. Miller. In the industry?

Mr. Slowik. In the industry, I cannot answer.

Mr. Miller. Thank you.

Mr. Thompson. Thank you very much.

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A CASE OF MULTIPLE PERSONALITY

By

Stanley Abrams

A thirty-four year old woman was accused of the embezzlement of 8,000 dollars in what appeared to be the beginning of a rather routine case. Her method seemed rather unsophisticated and one in which it appeared that she would inevitably be discovered. When she took the deposits to the bank for her employer, she simply crossed out the "for deposit only" stamp and signed her name over it indicating to the teller that they needed cash at the store. She admitted this, but said that her employer received the money, which he denied.

The defendant had a long history of emotional problems and had been in treatment for the last five years. Her boyfriend had been experimenting with hypnosis and using it with her for a considerable period of time. In the process, he had reportedly uncovered the existence of a multiple personality and she had been receiving therapy for this disorder for the past year.

A multiple or alternating personality is described in terms of the presence of one or more separate and distinct personalities existing in the individual in addition to his primary personality. It may develop out of a conflict between various facets of the individual's personality which is resolved, not by an integration, but by a splitting apart into almost separate beings. In many of these cases, the primary personality is overly moralistic, inhibited, and Polly-annish denying the presence of such feelings as hostility and sexuality. In spite of attempts at repressing these unacceptable feelings they force themselves closer to the surface so that two incompatable need systems exist at the same time. One of the solutions is to exist as separate entities with the main personality continuing its former life style while the other part of the individual becomes the very opposite. Often there is complete amnesia, with neither personality being aware of the other, but in some cases, the amnesia is one way. In those individuals, it is the secondary personality who understands the situation and knows what happens when either personality is in control. There is frequently a battle for control with the secondary personality attempting to get out, to take over for longer periods of time. Resentment often exists toward the major personality because of this competition and the secondary personality may do things to create problems for the other personality.

The various personalities are quite different, even though they are in the same body. They thing, feel, act and even look different. They assume different names and lead separate lives. While cases of this nature are rather rare, 76 were found in a search of the literature done in 1944. Most people are familiar with The Three Faces of Eve and Sybil.

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As bizarre as the multiple personality seems, it is not a psychotic state, but rather, it falls into the neurotic classification. It is one of the dissociative reactions which include amnesia, fugue and somnambulism. In the case of the former, the person's life is so stressful that he is forced to escape from it by forgetting everything about himself. He does not forget his language or any of the other necessities of functioning, only enough to get himself out of an intolerable situation. In the fugue state, the individual goes a step further in that it is actually a flight. He may come out of it years later finding himself in a different place, with a different vocation and even a different family. Obviously, the psychological dynamics are the same, the person leaves an unacceptable situation in an unconscious search for a better life. In somnambulism, sleep walking, the individual carries out activities of which he is unaware, but which usually serve some purpose.

In all of these cases, there is no conscious awareness of the activities that take place, nor can they be controlled. Being unable to conform one's actions to the requirements of the law is one of the usual definitions of mental defect or disease, therefore, in many states the individual would not be responsible for any criminal acts committed.

Because the defendant had been diagnosed by her therapist as having a multiple personality, she was referred for a hypnotic session to determine if these other personalities did, in fact, exist. The patient was a weepy, whiney, depressed woman who presented a rather drab appearance. Through her discussions with her boyfriend and her therapist she was aware of the other personality that reportedly had gotten her into so much difficulty over the years. She actively resisted letting the other personality out fearing what might occur. Under hypnosis the patient's voice changed to that of what she indicated under questioning was a seven year old child. In the child-like voice she described her battles with the bad other one, who will be called Betty.

Both the primary personality and the second personality, that of the child, fought to keep Betty from gaining control. Suddenly and very dramatically, there was another voice change and with it the posture, facial expression, and over-all response was altered as Betty came out. She smiled, taunted, teased, was nasty but through it all she was lively and rather attractive. Her emotional response, behavior, and actions seemed to be at about the level of a twelve year old.

While the exposure of the two secondary personalities seemed to be proof of the existence of a multiple personality, this was no guarantee that this woman was not malingering. Since a person who was somewhat knowledgeable about hypnosis, could quite readily feign this state without the hypnotist being able to detect it. It was possible that both the hypnosis and the multiple personalities were being faked. Complicating the issue even further is the fact that hypnotized subjects are quite capable of fabricating without being aware of it. IT was conceivable that her boyfriend had unintentionally suggested the presence of another personality while she was hypnotized and that she was hysterical enough to maintain this notion.

At that point in time, all that could really be said was that the the patient appeared to have a multiple personality and it appeared that

she had been involved in some fashion in the embezzlement. To clarify these issues, a polygraph examination was administered. Two separate tests were conducted with the first directed toward whether she had faked the presence of the other two personalities when she had been hypnotized several nights before. In this phase of the examination her responses to the critical questions were indicative of truthfulness. In the second test, she was questioned about the theft of the money and the results in this case were found to demonstrate deception. This, however, only indicated that someone in that body was responsible for the loss of the money. Since the polygraph has the capability of measuring unconscious processes, the findings did not necessarily indicate that the guilt rested with the primnary personality.

Since Betty was the only personality who appeared to be completely cognizant of all of the activities of the three personalities, the decision was made to attempt to test her. After another long struggle, Betty was finally brought out. As might be expected, she refused to take the test, alternating between dares and teasing saying, "you can't make me!" Recognizing the futility of this, the approach was shifted to that of an interrogation. Because of her blatant immaturity, the questioning was conducted in a fashion that mimicked her own teasing childish style. Statements like "You're not smart enough to get the money," resulted in a piece-meal description of not only how she accomplished it, but in a braggardly presentation of many of the other things that she had done. It was apparent that much of her motivation was tied in with the hostile feelings that she had for the primary personality. She threatened that she would make her go to prison or commit suicide "so that I can be free." There was no way of pointing out the lack of logic in this statement that any imprisonment or death included her as well. By the end of the interview, there was a sufficient statement from Betty that demonstrated that she had embezzled the funds.

It is the opinion of this writer that polygraphy not only effectively determined that the subject responded deceptively when she denied the embezzlement, but that it also demonstrated her truthfulness regarding the existence of the multiple personality.

While this was a most unusual case, there is a growing awareness by the public of this psychiatric category. Through such movies as The Eyes of Laura Mars and Magic greater knowledge of this condition has resulted in the use of this disorder as a criminal defense. A number of attorneys have requested hypnosis of their clients when amnesia for the criminal act was claimed. In almost every instance, no evidence for the existence of a multiple personality was found. Several of these individuals, however, have attempted to feign having a multiple personality.

One such case involved a man who was accused of the sadistic sexual murders of two eleven year old girls. He denied any recall of any roll that he had played in their deaths, but he did admit to having a series of strange sensations at the time when these homicides took place. Moreover, he described episodes that occurred in his cell when he reportedly lost control of his body. When he was pressed as to what was happening, he said that he believed that he was possessed by the devil.

Since it is conceivable that this could be a form of multiple

personality, hypnosis was employed to evaluate his mental state. When he appeared to go into the hypnotic state he began to cry, and then, the sobbing stopped and he started to smile. His facial expression could best be characterized as a sinister leering smirk. He responded little to questioning except to admit that he had brutalized the two children. His motivation for this was, in his description simply, "I'm evil."

As in the other case involved, the secondary personality denigrated the other personality. In no way, however, would he divulge any incriminating information relating to any other crimes of a similar nature. It was felt that if the secondary personality were willing to do something negative toward it's own self, an existence of a multiple personality would be more believable. The feeling of this writer was that the subject was involved in a less than adequate acting performance. In order to corroborate this opinion, a polygraph examination was administered, but by another examiner in order to avoid any bias. The questions were very specific and direct and related only to whether the subject feigned the presence of the other personality during the time of the hypnosis. In contrast to the other case, the findings were indicative of deception.

A psychological examination of this individual argued further against the likelihood of his having a multiple personality. Instead of functioning in a hysterical manner, his responses were much more similar to that of the psychopath. He demonstrated little ability to develop any kind of meaningful relationship or loyalties, instead he only used people to his own ends. His intelligence and ability to charm people could create an impression of a good rapport, but it existed only to satisfy his own needs. He did not have the capacity to care for others or to emphathize with them in any manner. Unlike a criminal who could develop loyalties to his own group none of this was possible for this man.

Little sense of anxiety was present and certainly no evidence for any remorse. The only regrets he had were related to being apprehended. Since there is little or no guilt, the psychopath is capable of taking part in almost any antisocial act. In fact, he appears to crave the excitement associated with this. He is impulsive and has little ability to delay the gratification of his needs.

A very negative aspect of this personality type, is that he lacks the capability of learning from experience. Therefore, neither punishment nor therapy will be very likely to alter his behavior.

The defendant was found guilty, but, as an example of his ability to charm and manipulate others, in spite of the heinousness of his crime, he managed to get the support from a large number of "Born Again Christians" who wanted his release becuase he had found God.

It is felt that these two cases will lend some support to the value of polygraphy in assisting in making a differential diagnosis in this type of individual.

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