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AN INTRODUCTION TO THE NUMBER TEST

By

Gordon H. Barland, Ph.D.

This issue of <u>Polygraph</u> is devoted to the number test, also known as the stimulation test, stim test, or card test. This type of test was developed very early in the evolution of the polygraph technique. Many variations of it exist. In some variants the number is known to the examiner before the chart is run and the subject is fully aware of the examiner's knowledge. In other variations the examiner genuinely does not know what number the subject picked until the test is concluded.

Several examiners were invited to submit articles explaining their use of the test in detail. This issue does not attempt to present an encyclopedic review of this type of test. The purpose of this series of articles is to illustrate the diversity of this test in sufficient detail to encourage examiners to try different approaches which they may not have been aware of before.

Before turning to the various "how to" articles, it might be appropriate to review some of the advantages and disadvantages of the number test, together with a brief mention of the circumstances under which the number test is probably most useful.

The advantages are many. Probably the single most important purpose is to increase the differential responsivity of the guilty and innocent subjects, thereby making it easier to differentiate between them. By convincingly demonstrating to the subject how accurate the polygraph is, the truthful subject, who may well have been fearful that a mistake may be made, is reassured. He thus tends to relax on subsequent charts, at least in reference to the relevant questions. The guilty subject, on the other hand, would be expected to be more concerned about his lies to the relevant questions; if before he had thought he could beat the test, he now has doubts.

A related advantage of the number test, especially when there is a large number of spontaneous reactions on the first chart, is the reduction of the number of such reactions on subsequent charts, because the subject is more familiar with the polygraph equipment. Indeed, many examiners routinely conduct a numbers test as the very first chart in the examination, in order to acquaint the subject with the polygraph.

A few examiners routinely use a number test as part of every examination they conduct, including pre-employment screening examinations, because it tends to increase the number of admissions. In this regard, it is extremely useful for helping to clear the basically honest applicant by persuading him to get those minor things off his chest which otherwise might cause reactions on the charts. Similarly, the number test frequently makes an excellent interrogational wedge, particularly in those cases where an employee has admitted stealing several hundred dollars, when the possibility is that he has actually

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stolen several thousand. A skilled interrogator can refer back to the number test to convince the thief that it is useless to try to lie about how much money he has taken. In fact, the number test seems to work much more accurately than a searching peak of tension test, because in the case of the **searching** peak, the amount of money that has been embezzled over a period of time, is often not precisely known by the subject. This results in vague and ambiguous charts that are often impossible to interpret accurately.

Another advantage of the number test is that it may yield information regarding which channel of physiological information may be the most productive with any given subject. The principle of individual response stereotyping suggests that the number test may be helpful in alerting the examiner about how the subject reacts. However, caution is needed. It would be foolish to expect that the numbers test will show the examiner precisely what the subject's "lie response" looks like, since there are important differences in the psychodynamics of the peak of tension test as compared to other test formats.

Those examiners who like to observe behavior patterns find that there are two aspects of the number test which afford behavioral clues. One is whether the subject attempts to engage in countermeasures on the test, either by "failing to understand" the instructions, or by the usual physical or respiratory manipulations. The other behavioral clue is the subject's reaction when the subject believes that the examiner did not know the number at the outset of the test. The innocent-as-later-verified-subject often smiles and looks relieved, whereas the guilty-as-later-verified-subject seldom smiles, and usually shows no outward reaction or attempts to minimize the importance of the test.

One advantage of the test which is frequently overlooked is the value of the impression it makes on the subject concerning the accuracy of the polygraph. Each person being examined within the employment context may later be in a managerial position. It may be his decision as to whether to employ the polygraph in a future situation. The manner in which he was treated during his polygraph examination, and his impression of the polygraph's accuracy, based in part upon his experience with the number test, will probably influence his decision.

Another advantage of the number test is that it increases the examiner's competence and experience in administering and evaluating peak of tension tests. Also, it is ideal for research, since ground truth is available. It can be employed under a wide variety of conditions, and can be objectively scored when necessary.

When considering the use of the number test, there are disadvantages which must be weighed. One is time. It takes about five minutes to conduct such a chart. Another is that, it consumes several chart minutes which, everything else being equal, would be expected to reduce the number of useable charts that can be obtained during the whole testing situation. However, the psychological impact of the test may counteract the decrement expected from the chart-minutes concept.

When should the number test be employed? Some examiners use it in every examination they conduct, including pre-employment screening. Others use it in all criminal cases. Still others use it only in certain situations, which will vary from one examiner to another. Many examiners use them when the first chart indicates that the examination may be inconclusive, either because of a generally high level of spontaneous reactions, or because the subject's psychological set does not appear to be oriented toward either the relevant questions or the controls. It is also particularly helpful when the subject expresses a lack of confidence in the accuracy of the polygraph, such as often occurs when the subject claims that a previous examination on the same issue was in error when it showed that he was deceptive. Another situation where it is often employed is when the pretest interview indicates that the subject may not be testable because of the use of drugs, or some other factor such as a neurosis. Many examiners believe that if the subject appears to be in contact with reality during the pretest interview, and he reacts appropriately on a number test, the examination should proceed normally.

The number test is frequently used to demonstate the polygraph during a lecture or when briefing potential clients. It is helpful when preparing to conduct a searching peak of tension test, both in criminal and in industrial cases. Finally, some examiners find it helpful to employ the number test when screening a number of employees at a firm. When the subjects return to work they usually tell the other employees about the testing, including the number test. There may be an increase in the admissions made by subsequent subjects in such a situation.

It would thus seem that the number test can be very helpful in a variety of situations. It is hoped that the following articles will introduce to the new examiner some of the variations of this useful test, and will help the experienced examiner to broaden his knowledge of them.

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THE ARMY STIMULATION TEST - A CONTROL PROCEDURE

By

Ronald E. Decker

Since 1966 the U.S. Army Polygraph course has taught a stimulation test as a control procedure for use with all techniques except peak of tension. It is now used with ZOC, MGQT, GQT and Screening Tests.¹ There is absolutely no trickery in this test.

Position in Series

The stimulation test is usually conducted as the second chart, after the first chart of the ZOC, MGQT, GQT or Screening Test. However, if the examinee declares that he does not believe in the polygraph, the technique, or the examiner, the stimulation chart is conducted before the first chart of the relevant series. Although rare, it is also the first chart if the examinee brags that he has beaten another examiner, whether true or not. If the examiners use two series, say a ZOC followed by an MGQT, the stimulation test is not conducted in the second series. However, if there has been a break for lunch, or the second series is given the next day, then a stimulation chart is employed.

Pretest Explanation

The explanation to the examinee is that this chart is to determine with certainty that the polygraph instrument is properly adjusted to him. He is then asked to pick a number between 3 and 7, and write that number with a felt tip pen in a large figure on a sheet of paper. To give emphasis the examinee is instructed to write the number with the hand that he does not ordinarily write with. He then cannot forget the act of writing that number. This sheet of paper is then hung on the wall in front of the examinee at eye level. The examinee is told that he is to deny having picked the number appearing in front of him when it is mentioned in a series of numbers. If the selected number is 5, the list is 3, 4, 5, 6 and 7. If the examinee has picked 3, 4, 6 or 7, a buffer of two numbers is placed on each side. Thus the total number of stimuli is five. to which the examinee gives four truthful answers and one lie. Α series of seven numbers may be used instead of five, if the examiner chooses to do so. The decision to use more numbers is based upon the observation of excessive nervous tension or deliberate muscular movements during the first relevant chart.

Technique

The series is given once, in sequence, with fifteen second intervals.

¹ZOC is a zone comparison technique, MGQT is similar to the Reid Control Question Technique, and the GQT and Screening Test are relevant-irrelevant techniques.

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The electrodermal section is placed in manual mode (d.c.) so that the baseline trend is available. The cardio, pneumo, and auxilliary channels remain at those settings that were satisfactory for the first relevant chart. The chart interpretation rules are those for the peak of tension in which you consider anticipatory, specific and relief responses. If there is a reaction to the chosen number and a reaction to an additional number, that fact is made known to the examinee who is then asked about the response to the number that was not chosen. Inevitably there is an explanation by the examinee that this number has a special meaning; or they were trying to see if the instrument would pick up their concentration on a number other than the obvious one; or they were trying to confuse the examiner. If the chart, and particularly the response, is so clear that a layman can interpret it without explanation, the chart is shown to the examinee. Although the responses are clear and accurate in more than 95% of the charts, those charts which are less than obvious, particularly those with anticipatory reactions, are not shown to the examinee. Instead, he is simply told that the instrument is recording in all parameters in a satisfactory manner. The few cases in which the chart does not disclose reactions to the selected number are most often produced by deceptive subjects whose sole concern appears to be limited to the relevant questions. The stimulation chart is marked and preserved as a part of the permanent record.

Question Formulation

The question wording is simple. The examinee is asked a preparatory question: "Regarding the number you wrote," then asked in series: "Did you write the number three?" "Did you write the number four?" "Did you write the number five?" "Did you write the number six?" "Did you write the number seven?" The preparatory question is asked only once. The selected number is the middle item in the list of five, or seven.

Summary

The stimulation procedure taught at the U.S. Army course, attended by nearly all Federal examiners, is a peak of tension test in which the number is opening selected by the examinee. Reinforcement to assure memory of the selected number is achieved by having the examinee write the number with his non-dominant hand, and by posting the selected number in front of the examinee at eye level during the examination. There is no trickery. The stimulation chart is usually the second chart in the series of a ZOC, MGQT, GQT and Screening Test. The series is read only once, and when the reaction is obvious the chart is shown to the examinee. The purpose is to instill confidence in the polygraph technique which gives the truthful more confidence and creates more specific responses among the deceptive. It is a control procedure which has proven its value as an adjunct to all standardized government techniques.

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THE UTILIZATION AND EFFECTIVENESS OF THE STIMULATION TEST

By

Stanley Abrams, Ph.D.

The science of polygraphy is primarily a psychological procedure and only secondarily of a physiological nature. There is no better demonstration of this than in the Stimulation Test, for here, the entire purpose is to enhance the subject's responsiveness through psychological means. Generally, this approach has been characterized in terms of increasing the fears of detection in the guilty while allaying the anxieties of the innocent. This, however, is inconsistent with the theoretical foundation of polygraphy - the concept of the psychological set. Although the guilty are fearful of the deceptive response to the relevant questions being discovered, the innocent should be just as concerned that their lies to the control questions will be detected. Thus, when used with a control question technique, the purpose of the Stimulation Test is not to reduce the fears of the innocent; but rather, as in the case of the guilty, to make them fearful that their deception will be discovered. Their set will be directed to the control questions while the attention of the guilty will be concentrated on the relevant items.

It is obvious that the effectiveness of the Stimulation Test is almost wholly dependent upon the manner in which it is introduced to the examinee. Unless this is carried out in an adequate manner, the procedure will not serve it's purpose. This may explain why research in this area has not always shown this approach to be valid.

Ellson <u>et al.(1)</u> reported that subjects whose deception was detected, and who were informed of this, were actually more difficult to correctly evaluate on later tests. In contrast to this, Gustafson and Orne (2) found a tendency, although not statistically significant, for motivated subjects who had been informed that they had successfully deceived the examiner, to be more difficult to accurately diagnose in subsequent tests. Those individuals who had not been given any feedback or who had been told that their lying had been discovered, demonstrated no change in detectability. In a follow-up study, Gustafson and Orne (3) indicated that "...successful detection maximizes subsequent detection." Another attempt at determining the effectiveness of the Stimulation Test was carried out by Barland and Raskin (4) who reported little success in establishing the validity of this procedure. They indicated that, "The manipulation of feedback on the card test failed to produce a reliable effect regarding detection of guilt or innocence..."

The inconsistent findings of the research are mainly due to the complex interaction that exists between the examiner and the subject. This variable is most difficult to control as an experimental situation because it varies in each examination and with each polygraphist. Richard O. Arther (5), for example, impresses the examinee not only with the fact that his deception is readily detected, but that he is unquestionably one of the most easily detected subjects that he has ever seen. When the examiner presents the Stimulus Test in a manner that convinces the guilty that their lies to the relevant

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questions will be detected and the innocent are equally certain that their deception to the control questions will be determined, then the stimulation procedure will enhance the validity of the polygraph findings. The innocent subjects, however, must believe, also, that if their deceptive responses to the control questions are discovered, they may be considered "guilty."(6,7). When these conditions are met, it is felt that the Stimulation Test is a highly significant part of the polygraph procedure and definitely increases the subject's detectability.

In this writer's employment of the Stimulation Test, it is first introduced to the examinee during the explanation of the physiologic basis of the polygraph technique. The depth of explanation is dependent on the subject's intelligence and education, but it is always included in the pre-test interview. In general, he is informed that sympathetic arousal occurs in response to fear. and any fear, including the fear of being caught in a lie, will precipitate this. The purpose of the physiologic changes, is to assist the organism to run or fight more effectively. A reduction in blood to the skin areas reduces the risk of blood loss if there is an injury and a stronger contraction of the heart results in more blood and thus more needed nourishment being circulated throughout the body. All of these and many other changes take place in every single person when a fear reaction occurs, but individual differences exist. In some individuals, there is a more significant rise in blood pressure, while in others it is heart rate or hormonal changes that show the greatest reaction. While differences among individuals exist, there is also a unique pattern of response for specific emotional states. Therefore, once an individual's physiologic pattern associated with the fear of being caught in a lie is determined, it can be differentiated from other emotional reactions. It is described as being comparable to a fingerprint, and when this pattern is ascertained, these responses can be readily separated from reactions with nervousness, tension or any other states of stress.

To demonstrate this further, the subject is shown a set of tracings of a Stimulation Test in which the deceptive response is quite obvious. At this point, it is explained that the individual was asked to write a number between 20 and 25 and then instructed to respond "no" each time he was asked if he had written one of those six numbers, including the one which he had actually chosen. He would, of course, be lying on one of the numbers. The subject is then shown where the deception occured and how readily it could be detected. Respiratory tracings are never discussed, but changes in heart rate, cardio, and GSR, are pointed out. Again, it is emphasized that this is this individual's unique response to lying and that it is different from other emotional states. To determine his "fingerprint" or pattern, he is now asked to write a number between 20 and 25 just as the other person had done. The Stimulation Test is administered immediately after the first chart of the first test. The subject is reminded to respond in the negative to every number including the number that he wrote on the paper. When the correct number is detected by the examiner, a considerable amount of emphasis is placed upon the ease of which the subject's truthfulness or deception was determined. He is shown his own charts and a number of areas are discussed which characterizes his unique pattern. The examiner can now reassure the subject emphasizing that his truthfulness can be easily interpreted. It is not felt that it is necessary to point out that his lying will be detected just as easily since

that is a natural assumption for the examinee to make himself. Now it appears as if you are only reassuring him when you tell him, "Relax, now you have nothing to be nervous about. If I can tell when you are truthful on something as unimportant as a series of numbers, then I can do it easily on the questions." While on the surface it seems to be supportive it is a constant reminder to the subject that wherever he lies on the test, it will be discovered. Therefore, the impact of the Stimulation Test, can be maintained throughout the examination.

An occasional statement such as, "As long as you're responding truthfully to every question, you have nothing to worry about," assures the innocent subjects orientation toward the control question. It should not be overdone, however, because it is conceivable that too great an emphasis on this might cause the guilty individual to react more to the control questions as well.

It has been found that the effectiveness of other stimulation procedures is enhanced if the subject is actually informed that this is the purpose of the particular test. Employing the Mixed Question Technique, the examinee is told that altering the method serves a very definite purpose. "I want you to understand everything that I do so that nothing will come as a surprise to you. Now, I'm going to alter the order of the questions. The reason is that when a person is going to lie to a particular question and it now appears in a different position, he is taken by surprise, and reacts even more to the question than he had before. For the truthful person, it really doesn't matter. In fact, with each repetition of the test the truthful person becomes more bored and his reactions decrease, while the person who is going to lie, shows an even greater response."

This sharing of confidences with the subject in what appears to be an attempt to keep everything above board is actually just that. If your information giving also serves to stimulate him, so much the better.

The Silent Answer Test is introduced as an approach that really elicits a much greater response from those persons who respond deceptively. "The reason isn't completely clear," he is told, "but perhaps it relates to the difficulty people have in lying to themselves. What ever the reason, when a person lies to himself on this, it really affects him." He may also be told, "This is the test that really makes the difference, I'll have my answer after this."

The stimulation techniques are seen as an ongoing procedure that are composed of much more than the formal methods of the Silent Answer Test, The Stimulation Test, and the Mixed Question Technique. Suddenly shutting off the instrument after the subject shows a reaction to the question, "Are you going to answer all of my questions truthfully?" has been found to be a highly effective stimulating approach. His deceptive reaction is pointed out and while it may result in having to alter the wording on a question, the impact on the subject is quite large. It again emphasizes the polygraphist's ability to detect his deception.

In a similar manner, the polygraphist might question the examinee's reaction when he was asked, "Is your true first name Charles?" In this case,

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he is probably responding because he is usually called Chuck or Charlie. The examiner can ask him if he uses any name other than Charles and when he is informed of this, it gives the polygraphist another opportunity to indicate how very sensitive the instrument is.

Quite obviously, the subject should not be bombarded with a mass of stimulating techniques. This writer always uses a Numbers Test and the others are added only if there is difficulty in obtaining a clear truthful or deceptive response. Overdosing may defeat your very purpose and cause the examinee's reactions to flatten out because the subject stops believing what he is being told or possibly because he simply gives up and his sympathetic arousal is reduced.

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USEFULNESS AND THEORY OF THE STIMULUS TEST

By

Richard C. Hickman

The theory and usefulness of the stimulus test have been subjected to pro and con arguments by polygraphists for many years. Some hold out that the theory is not valid and that the usefulness of such a test is negligible. Others maintain that the stimulus test is a highly valid concept and should be an integral part of the polygraph examination. It is the point of view of the Los Angeles Institute of Polygraph that, when the stimulus test concept is understood and properly applied, it is of unquestionable value.

Our students are taught to refer to this particular testing technique as a "control test". We do not argue with those in the profession who refer to it as a "stim test" or "stimulus test"; however, it is our feeling that the words "stimulus" or "stimulation" can lead to an inference of some sort of artificial stimulation of the examinee. This is admittedly a minor point, but one we believe should be considered.

The control test, as taught at the Los Angeles Institute of Polygraph, is of major importance and is intended to convince the examinee that the polygraph does work, and that it works on him. The examinee, regardless of whether he intends to be truthful or untruthful, should have no doubt in his mind about the outcome of the overall examination. Our students are taught that the control test is administered primarily as the first test chart. They are also made aware of the Reid technique, whereby the "card stimulation test" is routinely administered as the second test chart. Upon completion of their training, the students have the option of deciding whether to administer the control test as the first chart or the second chart. We believe, however, that if the examiner is going to make a "believer" out of the examinee; why not do it with the first test chart?

We teach our students that the control test is likely to be the most important test chart of the entire series of charts. For this reason, the examinee must also be impressed with the importance of the control test. The examinee must understand what the examiner is doing and why he is doing it. There is little likelihood that the control test will serve its intended purpose if the examinee thinks of it merely as a game.

At the Los Angeles Institute of Polygraph, we do not encourage our students to use playing cards or flinch cards for the control test. While there is probably nothing wrong with using cards - it has been done successfully for many years - it is our belief that the statement: "choose a card" might generate the thought of trick in the mind of the examinee. If he believes that the examiner already knows the answer, it might tend to dampen the effectiveness of the control test.

We suggest that the examiner write down on a piece of paper a series of numbers, e.g., 10, 12, 14, 16, 18, 20 or a series of colors, e.g., white, blue,

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green, orange, yellow, red. He instructs the examinee to circle any one of the items, without the examiner watching him do it, and then place the paper face down on the desk. It is important that the examinee can see that the examiner does not know which item was circled. The examinee is then given instruction as to how he will answer the questions, with the understanding that by following instructions he will be deliberately lying during the test. The examinee is then given an explanation of the control test, substantially as follows:

"It may appear to you that this test we are about to do, where we have already agreed that you will be deliberately lying to me, might be some type of game. On the contrary, let me assure you that this test is probably the most important part of the entire polygraph examination. Let me explain some of the reasons why this test is so important, even though we are only asking questions about which number (color) you circled on a piece of paper. First, if you happened to be one of those rare individuals who cannot be adequately tested on the polygraph, it is important that we make that determination right in the beginning. It would serve no purpose to go through the entire examination if I cannot analyze your test charts, and I can make that determination with the preliminary test. Second, if an individual has never before experienced a polygraph examination, or if it has been a long time since he was last examined, I think it is very important that he have an idea of what it feels like to have the various polygraph components attached to his body, the spacing of test questions, and the sound of the examiner's voice asking the questions. In other words, we can remove a little of the mystery of the polygraph technique, without experimenting during the main test. The most important reason for this test, as I see it, is this: You already know the questions which will be asked during the main test. and you have already told me how you intend to answer them. I have to believe that your main interest at this point is knowing that truthful answers during the main test will be recognized as truthful answers."

When we finish with this preliminary test, the person who plans to give truthful answers during the main test experiences a feeling of relief and confidence. He now knows that truthful answers were recognized as such, and that a deliberate lie could also be recognized as such. In other words, he now knows that the polygraph works, and that it works on him. The truthful person is thinking "if it works, I have no problem - I do not plan to be lying during the main test." We continue,

"On the other hand, the liar does not care much for this preliminary test. He, too, has now found out that the polygraph works, and that it works on him."

The liar is now thinking: "if he can even pick out a simple number (color) which I circled on a piece of paper, what is going to happen when I lie about something important?" What it all amounts to is that - we are trying to give a little reassurance to the truthful person, and we are not trying to do any favors for the liar.

We continue,

"It will be most interesting to see if you are mentally capable of defeating me during this preliminary test. What I would like you to do is envision another one of the numbers (colors) I wrote on that piece of paper and see if you can concentrate on it to the extent that I will not know at which point the actual lie took place. The reason I offer you this challenge is because I know you cannot do it. The harder you try to not think of the number (color) you actually circled, the more your thoughts are directed to that very number. I will tell you this, however, if you are capable of defeating me on this preliminary test, we will not bother with the rest of the examination."

"Now, do you remember the number (color) you circled? Is it clear in your mind that you are to answer no to all questions during this test, even when you know that one of those no answers is a deliberate lie?"

Above, in substance, is how students at the Los Angeles Institute of Polygraph are taught to develop and administer the control test.

In summary, it is the point of view of the Los Angeles Institute of Polygraph that the control (stimulus) test should be an integral part of the polygraph examination. In that it is important to the overall examination, it is the obligation of the polygraphist to take those few extra minutes to develop the test in a logical, meaningful manner so that the examinee knows and understands what is being done, why it is being done, and why it is of great importance. The end goal is to convince the examinee that both truthful and untruthful answers will be identified as such.

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USE OF THE STIMULATION TEST IN PRE-EMPLOYMENT TESTING

By

Keith Robert Fingerhut

It has been traditional sentiment among certain factions of the polygraph profession to minimize the significance of the procedure used in conducting a pre-employment examination. As such, stimulation techniques are not usually integrated into regular testing practices. This is a situation which should be rectified.

The almost total reliance on the pre-employment examination by some companies as their only step against pilferage may create a problem for the polygraphist who takes this test too lightly. When the polygraph is utilized as the only deterrent to dishonesty and the technique fails to demonstrate its effectiveness to the undetected liar, that individual may begin to believe that any subsequent acts will be committed with impunity. This situation is analogous to the employee who, one day to his amazement, discovers that the video camera which has undulated back and forth during the past six months supposedly monitoring his activities is nothing but a dummy box with a blinking red light. The psychological deterrent now gone, the atmosphere ripens for acts of theft.

The basic theory of the polygraph technique is that the fear of detection will evoke sympathetic arousal of the autonomic nervous system in the individual who is lying to a particular test question. These changes from the subject's norm are then picked up via the attached receptors, conveyed to the instrument, and then simultaneously recorded on the chart paper for subsequent evaluation. However, if there is no fear involved (e.g., the apathetic applicant, the disbelieving applicant), these deviations may not take place sufficiently enough to lead to detection. Thus, many "inconclusive" charts may be misinterpreted as being the charts of one who is telling the truth. An additional factor in pre-employment cases, too, is the presumed absence of effective control questions which probably increases the degree of difficulty of analysis even further.

Another complicating factor in this type of test is that some individuals may have taken an examination in the past and lied; yet, they might have been hired by the employer. The reason for such a circumstance is that even though deception has been duly noted in the report and brought to the subject's attention during the exam, many companies deny employment only when deception indications are substantiated by significant post-test admissions. Thus, when the lying applicant is called to commence employment, he or she may well be under the false impression that somehow the test was beaten. This situation probably raises serious implications regarding that person's lack of belief in the efficacy of the technique. Steps must be taken, therefore, to affirm the subject's knowledge of the effectiveness of the procedure, thereby assuring some degree of fear of detection.

The author is a member of the American Polygraph Association and is currently a polygraph examiner for the Wackenhut Corporation in West Palm Beach, Florida. Various methods of subject stimulation have been developed over the years. These range from the test described by Reid and Inbau in their 1977 edition of <u>Truth and Deception</u>¹ to the Lie Pattern Recognition Test (LPRT) as reported by Joseph G. Law, Jr.² For further references to literature on this test consult, <u>Truth and Science</u>, a polygraph bibliography compiled by Ansley and Horvath.³

Stimulation Test Procedures in Pre-Employment Testing

The type of stimulation examination used by this author is actually a known solution peak of tension test, administered prior to all other testing.

A board containing a list of eight nouns, arranged vertically, is placed in front of the subject after the attachments are in place. In the examiner's hand is a small deck of cards containing the nouns on the list. Before anything else proceeds, the polygraphist carefully explains the purpose of the test.

"As you may or may not know everybody can take a polygraph test without problems. About ninety-five out of every one-hundred people can take a test at any given time. But, five percent, or five out of every one-hundred can not take a test one day and would have to be rescheduled for another time due to some sort of physiological condition present which might affect the proper recording of the body's responses to questions."

"I want to make sure that you can take a test at this time. I want to make sure that when you tell the truth, the polygraph will record that as being the truth. I want to make sure that when you lie, even though I will have told you to lie, the polygraph will record that as a lie. I want to make sure that it is completely accurate in both instances."

The examinee is then instructed to pick a card from the deck and look at it out of the polygraphist's view. He is told to place the chosen card with its face down on his chair's armrest. The examiner then shows the subject the faces of the rest of the cards in the deck without looking at them, himself. He then places the remainder of the deck adjacent to the chosen card. This careful procedure will do much to ensure the examinee's confidence in this test.

²Law, Joseph G., Jr., "Report on a New Stimulation Test." <u>Polygraph</u>, Journal of the American Polygraph Association 6 (2)(June 1977): 132-148.

³Ansley, Norman & Frank Horvath, <u>Truth and Science</u>, American Polygraph 1977.

¹ Reid, John E., & Inbau, Fred E., <u>Truth and Deception</u>, <u>The Polygraph</u> ("<u>Lie</u> <u>Detector</u>") <u>Technique</u>, Second Edition: The Williams & Wilkins Company, 1977, p. 42-43.

Finally, the subject is instructed to answer "no" each time the polygraphist asks if he has chosen that card, even when the actual card chosen is asked. Further instructions inform the subject that questioning will commence with the top card on the list and then proceed down to the last, in sequence.

The test is then administered. After the card is successfully indicated by the polygraphist he should then inform the subject that he is a suitable subject and that in a few minutes the regular testing phase will begin.

Many times, during the interval between the card test and the regular examination, the subject may spontaneously request a change in answers. He may say something like, "I just remembered; the last time I smoked marihuana was not four months ago. I took one two days ago when my cousin came in from out of town."

These admissions demonstrate just one of the possible advantages of the use of the stimulation test in pre-employment testing. Some of the others are as follows:

- (1) The subject's physiological norm patterns may be more readily ascertained.
- (2) The polygraphist may be able to determine if the examinee is planning to cooperate or will resort to evasive techniques such as controlled breathing and/or muscular contractions.
- (3) The examination is in a better position for post-test questioning since he can always refer back to the successful card test to indicate the efficacy of the testing.
- (4) The subject is now experiencing decreased anxieties if he has told the truth in the pre-test or increased tensions if he has lied. Chart interpretation is thus facilitated and the fear of detection is instilled in the minds of those who plan to deceive.
- (5) A general comparison of charts may be made to determine differences in overall stress levels between the card test and the regular examination. If the stress level is suddenly increased substantially, a problem concerning the subject's truthfulness is usually indicated.

Summary

In conclusion it may be stated that the pre-employment examination presents special problems to the polygraphist due to its wide area of coverage and the possible lack of significant emotional involvement in the issues of inquiry. As such, special stimulation techniques should be employed in order to increase both the validity and reliability of the examination. The use of the stimulation test can thereby create an advantage for the polygraphist and aid him in his detection of deception and verification of truth.

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By

Donald J. Lovvorn

Objectives

In every polygraph examination, one of the most important objectives is to determine the exact manner in which an individual will respond to telling a lie. In any specific issue polygraph examination, no matter what technique is used, it cannot be assumed with complete certainty that the test will contain any question that the examiner knows for a fact the subject will answer untruthfully. It is necessary to use a diagnostic test procedure during each examination to measure the manner and ability of the subject to respond to a lie, a lie the polygraph subject and the examiner knows that he is going to tell, a lie that is produced by giving an instructed negative answer under stimulation and under controlled conditions.

Psychological Set

In any polygraph test theory utilizing irrelevant, relevant and control questions, many examiners have noted in the past that during the first chart individuals who are apprehensive or fearful of the test itself may respond in a manner on relevant questions which appears to be deceptive and yet the reaction is actually caused by an excessively high level of nervous tension associated with being involved in a testing process of which the polygraph subject has little understanding or control. In the case of a truthful polygraph subject, the fear associated with being suspected of a criminal offense may be enough to trigger the "fight or flight mechanism" on relevant questions even though the polygraph subject is answering these questions with the truth. Let it suffice it to say that we cannot read the subject's mind, therefore we must diagnose what we are going to say is deceptive responses based on a reaction that we know without doubt is deception. This standard must measure and determine:

- 1. That the subject has the capability of responding to having told a lie.
- 2. The physiological tracing pattern that is produced on the polygraph charts when the subject lies.

The psychological impact of a controlled number stimulation test on the polygraph subject is twofold: First, it allays the fears, suspicions, and uneasiness of a truthful subject by giving a graphic demonstration to him that the instrument is capable of recording deception at a specific location on a polygraph chart, and that the examiner has the expertise to distinguish the point at which the deceptive response occurred. Second, in the case of a deceptive polygraph subject, the message is different but just as clear. The examiner has demonstrated his ability to determine where deception occurred

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on the chart and the subject knows he has produced a pattern of deception which will be used to diagnose and seek out other deceptive responses which may appear in the same manner on the relevant issue questions.

If the technique is properly applied, it gives the truthful polygraph subject confidence in the validity of the polygraph instrument and the expertise of the examiner. If the subject is deceptive, it creates the psychological fear of detection by causing him to realize that by producing this known pattern of deception, he is, in effect, helping and assisting the examiner to detect his lies to relevant questions. Many inconclusive opinions have been rendered by examiners who have failed to establish the proper psychological set.

Methodology of Presenting the Number Stimulus Test

Always conduct the modified number stimulus test as chart #2, following the completion of the first relevant question chart, chart #1. Do not make mention that the number stimulus test is to be given in the pre-test interview with the polygraph subject. At the end of my pre-test interview, I complete my preparation of my relevant question test; discuss each question and answer with the polygraph subject, then conduct chart #1. I mark this polygram for identification then set it aside without analyzing it. I then remove the electrodes from the polygraph subject's fingers and inform the polygraph subject, "This next test I administer is designed to do two things: To test your ability to follow basic simple instructions and To see how well you can concentrate. By the term concentrate I mean how well you can keep your mind focused on one thing for say five minutes at a time."

The success of this test is based on utilizing verbatim the introduction steps I just outlined. Do not give the polygraph subject any indication that you want him to tell you a lie so you can determine what his "lie pattern" is. In the case of most deceptive subjects who are the least bit articulate this is a simple invitation for him to attempt to manipulate his body or mind to avoid showing you what you want to know, i.e., his "Lie pattern."

Continue with instructions: "I am writing down five numbers I have selected at random on a piece of paper, 31, 32, 33, 34, 35." Be careful to avoid getting the subject's current age within the sequence of numbers you select.

A square of the paper is then torn off and given to the polygraph subject.

Continue instructions: "I am going to turn my back and look away so I cannot see what you are doing. Write down one of the numbers on the piece of paper I have given you. I don't care which number you write down." When the subject has written down the number of his choice, call his attention to the original sequence of numbers. Add a buffer number at the beginning of the sequence and a buffer number at the end of the sequence. Buffer - 30/31, 32, 33, 34, 35 /36 - Buffer.

Continue with instructions: "This test will be a continuous test consisting of two parts. On the first part of the test, I am going to ask you about each of the individual numbers I have written down on this piece of paper." (Show subject the numbers again) 30/ 31 32 33 34 35 /36.

"On this first part of the test, I am instructing you th answer "no" to all the numbers I ask you about, including the number that you wrote down."

If the subject has a questioning look on his face, explain that one of the objectives is to test his ability to follow the exact instructions he has been given. "Obviously if you answer all these numbers with "no", one answer will not be truthful because you did write down one of the numbers. Don't worry about it. After we complete the first part of the test and you answer all the numbers with "no", I will immediately begin the second part of the test by announcing, 'The second part of the test is now beginning; this time tell me the truth.' On this second test simply answer each number with the truth."

"Do you understand your instructions?"

"Repeat them back to me."

Continue with instructions: "Have you ever had any problems keeping your mind on one thing for say five minutes at a time if you really tried to?" Most subjects will say, "no." If the subject says, "Yes", the examiner should say, "Do the best you can to concentrate on what I tell you to because this is one area I'll be evaluating (scoring) you on."

Reattach the electrodes to the subject's fingers, make sure the cardio cuff and pneumo tubes are in place and announce that the test is about to begin.

As you are balancing the polygraph instrument to the subject's body, tell the subject to close his eyes and concentrate on the number he wrote down. "Keep your mind on this number until I instruct you otherwise." "The first part of the test is now beginning. Answer all my questions with 'no.'" Begin with the buffer number and go through the test in numerical sequence:

"Did you write down the number 30? Did you write down the number 31? Did you write down the number 32? Did you write down the number 33? Did you write down the number 34? Did you write down the number 35? Did you write down the number 36?"

As the chart is passing over the pen table, look for the major overall change in the tracing pattern. Keep in mind that this is a form of Peak of Tension Test. GSR will be a strong indicator if properly balanced, usually achieving the highest peak at the number to which the subject lies. Relief should be seen in the cardio tracing after the subject lies about the number he actually wrote down. Reactions differ in the pneumo area of measurement with the most common effects being an upward staircase effect or loss of baseline at the number that is lied to. Fifteen seconds after the last number is asked on the first part of the test in which the subject is answering all numbers with "no", announce, "The first part of the test is now complete. Wait for my instructions on the second part of the test." After 15 seconds announce, "The second part of the test is now beginning. This time answer with the truth." Remember that this test is continuous. The kymograph is still running; there have been no breaks in the continuity of the test. When the second test begins, the examiner should have by now selected the number at which the greatest change occurred. Call this number first in this manner:

"Did you write down the number ?"

If the subject answers "Yes," you will generally see a strong upward excursion of the galvo pen. At this point announce the end of the test. If you did not select the correct number that the subject wrote down on the first number, go through the complete sequence of the numbers at random, saving the second best reaction until the last number called.

The following is very critical in establishing psychological set by properly explaining the test to the subject. "Let me explain some of the many reasons I gave you this test. You have proven to me that you can follow your instructions and you certainly have the ability to concentrate on one item. The test actually goes much deeper than that. In following my instructions, you lied to me about one of the numbers when you said "No" to the number you had written down on the first part of the test. In doing this you produced a pattern on this piece of chart paper which describes to me what your body reactions look like when you tell a lie. Did you notice how quickly I picked out the number you lied about when we got to the second part of the test? I believe I called out the number you lied about first on the second part of the test. How was I able to isolate that number?" The subject will usually answer, "Believe I lied about it," or "You used that machine to find out." At this point almost any type of subject intelligent enough to examine will understand what has been done. The psychological set is being formed.

Close the examination by saying: "This chart you produced with the reactions of your body contains a definite lie pattern, the pattern you produced when you followed my instructions and lied to number _____. This chart will be used to seek out and isolate any other deceptive responses on the charts to questions that I'm asking you about the issue of which you are suspected. If you have lied to me about any of the issue (relevant) questions or intend to try to lie about them, this test will enable me to quickly detect them. If you are being truthful, this should show you the accuracy of the instrument and my ability to tell the difference between a truth and a lie as they are expressed on the chart."

At this point the psychological set of the subject should be properly formed, whether he is truthful or deceptive. The questions that were asked on the first chart (relevant question test) are then discussed with the subject and any semantic changes or rewording of questions is completed. Test #3, which is a direct repeat of test #1, is then conducted. After removing this third polygraph chart and marking it for identification, I instruct the polygraph subject to rest for a few minutes while I study and evaluate his charts.

Systematic Analysis of Charts

Analyze chart #3 first, analyze chart #1 next, then compare charts #1 and #3 with chart #2 (Number Stimulus Test). If deception exists at relevant issue questions, it will be more pronounced and of greater magnitude on chart #3 than on chart #1. If deception does exist, chart #3 will almost always support chart #1.

When no deception to relevant questions exists, chart #3 will usually be free of the erratic or inconsistent responses that sometimes occur on chart #1. The physiological manner in which the polygraph subject responded to the lie question (number) on the controlled stimulation test will be very similar in criteria and magnitude to deceptive responses in the relevant question tests. If the subject is deceptive and attempts to physically manipulate his body to distort chart tracings, this will become very pronounced on chart #3.

Psychological Concepts and Reasoning On Which the Test is Based

The reason that the instruction and introduction phase of the modified controlled number stimulus test is so important revolves around several psycological theory concepts. Answering untruthfulry to a number to which the subject has been instructed to answer untruthfully has very little strength of issue. By this I mean his answer will have very little psychological importance to him irrespective of how he answers the question. When the subject is told to concentrate on the number to which he is going to lie on the first part of the number stimulus test, this creates what amounts to an "instructed psychological set." By causing the subject's mind to focus on the number he knows he is going to answer untruthfully, the polygraph subject creates a response capability amplification mentally which approximates what his response potential would be if he answered a relevant issue question untruthfully. This enables the examiner to use the response produced to the lie on the number stimulus test as criteria for evaluating other such responses on the relevant issue charts. If the number stimulus test is conducted properly and the explanation of why the test was conducted is explained correctly, after the test is completed the psychological set of a deceptive subject is increased in magnitude on the next relevant issue question chart. His psychological fear of detection is amplified. In the case of a truthful polygraph subject, the number stimulus test has the effect of eliminating the level of anxiety and apprehension he may have had when the first relevant issue question chart was conducted. After the number stimulus test has been explained to the truthful subject, his psychological set will only center on the control question and not falsely on a relevant issue question.

Conclusions

Valid, accurate opinions on specific issue polygraph examinations are essential. A diagnostic testing process is necessary to produce known criteria of deception. The modified number stimulus test technique has enhanced my abilities in both of these areas.

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THE TRUE BLUE CONTROL TEST

By

Kenneth W. Scarce

The True Blue Control Test may be referred to as a "Stim Test," The purposes for the test are as follows:

It will assist you in convincing the Truthful Subject that the Polygraph Charts produced by him when he lies to you will be different than when he tells the truth. Therefore, it lessens the fear of the Truthful Subject who was afraid his truthful answers would appear as lies on his charts because he is nervous.

It will assist you in convincing the Untruthful Subject that if he lies to you that he will be found out by revealing his lies on the charts he produces. Therefore, it increases the fear of the Untruthful Subject.

It affords the Untruthful Subject the opportunity to attempt to distort his charts during the test in the hope that you will be unable to establish his deception pattern or his truthful pattern.

After the test is explained to a subject who intends to lie concerning the relevant questions, he has but a very short period of time to make a decision concerning this test such as: If this examiner can look at my charts and tell the difference between my lie answers and my truthful answers, then "I have had it," so if I feel any different inside when I lie to those red numbers I will distort my charts at my blue numbers when I tell the truth; I had better not take any chances so I'll distort the charts at both truthful and untruthful answers; this Examiner must be out of his mind if he thinks that he will be able to see a lie pattern on my charts after he has told me to lie to the red numbers; I intend to tell that examiner some half-truths today and now he is going to tell me to lie on a half-truth and if it appears on my chart as a lie I will tell him the truth before my test on those questions I was going to tell a half-truth; I don't want this examiner to be able to establish what my lies will look like on my chart so I won't follow his instructions to answer the way he tells me.

It will give you the opportunity to observe which channel or channels appear to give the most consistent deception pattern when the subject lies. The True Blue Test will also give the Polygraphists the opportunity to observe the various deception patterns that appear in the pneumograph tracing when the subject lies as well as in the cardio tracing, the GSR, the CAM, and plethysmograph tracings. The polygraphist will also be able to allow a sufficient time interval between questions to observe the quickness of response, the slowness of response, duration of response, magnitude of response and recovery time.

It will assist you in obtaining a good deception response when the subject lies on his tests to the control question or the relevant question.

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It will give you some truthful patterns on his True Blue Test chart that he produces when telling the truth.

It will convey to the subject that has ingested something in an attempt to "beat the test" that his countermeasure or countermeasures are not working even on little lies.

Material Needed for the True Blue Test:

- 1. Six white 8" x 5" file cards.
- 2. One bright red fiber-tip pen.
- 3. One bright blue fiber-tip pen.

Then draw a big red 1 (one) on one card; draw a big blue 2 (two) on one card; draw a big 3 (three) top half red and bottom half blue on one card; draw a big blue 4 (four) on one card; draw a big red 5 (five) on one card; and then draw a big 6 (six), color 6 (six) 3/4 blue from top down and the remainder 1/4 color red, so you end up with a partially red six but mainly blue.

Before showing the numbers and explaining the True Blue Test to the subject, I will give you the lead-in that I use (you may prefer some other, but I suggest you not tell the subject that we are going to play a little game here.) "I am a little bit lazy and I don't want to administer (run) anymore polygraph examinations than I have to. So what we will do first here today is to see if your charts look the same to me when you lie as they do when you tell me the truth or do your charts look different to me when you tell a lie than they do when you tell the truth. Now if your charts look the same to me when you lie and when you tell the truth then there would be no purpose of me testing you because it would simply be a guessing game and neither one of us would want that." (This little speech usually will put the subject in a competitive mood and/or one or more of the other categories heretofore mentioned). "Now what number is this?" (Holding card with the red 1 on it). After he answers "one" then ask "What color is it?" After he answers "red" proceed going through each number on the cards asking the same question. At the half red-half blue 3 he may say it is red and blue, simply add "right, half red and half blue." At the six he may say "it is mostly blue with a little red" add "would you agree that it is a partially red 6 but mainly blue." "Alright, shortly I will be standing behind the instrument and I will show you this red 1 and I will ask you, is this number 1 red? I want you to look at it, lie to me and say "No". The reason I want you to look at it is that you can see you are lying and your reasoning tells you that you are lying and just the mere fact that you are concious of telling a lie should cause a lie pattern on your chart if you are responsive to polygraph testing. I will then show you this blue 2, I will ask you, "Is this number two blue?" I want you to look at it and answer truthfully "Yes." Now when you lied to the red 1 (one) and told the truth to the blue 2 (two) then there should be a difference I could see on your charts if you are responsive to polygraph testing. I will show you this half red-half blue 3 (three) and I will ask you, "Is this number three blue," and I want you to look at it and answer "Yes." Now that would be a half-truth because it is only half-blue. It is like a True-False Test in school, you didn't get any credit for half of a question being true.

Now this will be the only time today that I will know you have told me a half-truth, on all of the rest of the tests today if you tell me a halftruth it will appear as a complete lie on your charts because a person's mind cannot separate half-truths or partial truths from complete lies. So if, and notice I said "If," you have in mind of telling me any half-truths or partial truths today, let us get those squared away frist before we start our testing on the issues. I will show you this blue 4 (four) and I will ask you, "Is this number four blue?" I want you to look at it, tell the truth and say "Yes." I call this test the True Blue Test because you are always telling the truth when you answer "yes" to the blue numbers and always lying when you answer "no" to the red numbers. So if you are responsive to Polygraph testing then your truthful answer to the four should look different on your charts to me than when you answer "Yes" to that half red-half blue three. I will show you this red 5 (five), I will ask you, "Is this number 5 red?" I want you to look at it and lie to me and say "No." If you are responsive to Polygraph testing then your "No" answer to the five should look different to me on your charts than your truthful answer to four. I will show you this mostly blue 6 (six) that is just partially red and I will ask you, "Is this number six red?" I want you to look at it and answer "No." Now that is a partial truth, but if you are responsive to polygraph testing then your "No" answer should look different on your charts to me than when you told the truth.

So here is what will be happening, everytime I ask you if a red number is red, you will lie and say "No." Everytime I ask you if a blue number is blue, you will answer truthfully and say "Yes." At the half red-half blue 3 (three), when I ask you, "Is this number three blue", you will answer "Yes," but when I ask you "Is this number six red", you will answer "no." Now turn your head toward me and keep it that way so you can see the numbers. (This also will afford the Polygraphist the position to see if the subject is closing his eyes and not looking at the number.)

To prevent the subject from using a hypnotic stare to avoid seeing the number on the card, you move each number slowly in such a way that his eyes follow the number shown. After the True Blue Test has been administered, you may want to show the subject his responses in the GSR and Cardio tracing, but do not call his attention to his pneumo responses or you may want to merely smile and advise the subject that the difference in his lie response and truthful responses are so much different that if he lies to any question on the test, you will certainly know it.

Some Other Advantages of the True Blue Test:

It is logical to the subject. It does not take on the implication of a trick. (Everything is out in the open and no play cards.) You cannot make a mistake with it. (Assuming that you fully understand the True Blue Test before you administer it.)

It is an effective way to dismiss the untruthful subject's claim after his test that the polygraph test just does not work on him. (Call his attention to his deception that appeared in his True Blue Test when he was lying and state "That the polygraph was properly recording your lies and your truthful answers, what makes you think that it stopped doing that all of a sudden", or words to that effect.) It is not necessary to actually show him his True Blue Test unless you decide to do so.

It makes sense to a Judge or Jury wherein there has been an insistence from the Court that the True Blue Test be explained.

It can be referred to by the Polygraphist in analyzing his pneumo patterns (<u>i.e.</u>, sometimes a subject when lying to the Polygraphist will so indicate on his chart with an ascending staircase and to another lie will so indicate on his chart with a descending staircase. Many times these two different pneumo responses are seen during his lies on the True Blue Test. Note: I realize that I do not nor do you use a "Stim-Test" to determine if the subject is being deceptive to the relevant questions, but at least it would indicate some possible deceptive responses your subject is capable of producing when he lies.

The test is structured somewhat similar to the main test the subject will be taking after this True Blue Test, in that he is answering "yes" to some questions and answering "no" to some questions. In telling some lies and telling some truths in this particular True Blue Test, the subject is lying two times, telling the truth two times, Telling one half-truth and telling one partial truth, but not in that order. My experience in using this test is that a person who responds with the greatest deception at 3 (three), the half-truth question, generally will be telling you some half-truths on your relevant questions.

This test can be shortened using only the 1 (one, 2 (two), and 3 (three). Richard O. Arther has modified the True Blue Test and shortened the test, and it works equally well for him.

Observations

One number on the True Blue Test when the subject is lying may indicate a greater response than another number he has lied to. The subject may not produce a good solid deception pattern to each and every question wherein he did lie or produce deception in each and every channel on your polygraph instrument. (This, it would appear, could also be a general statement concerning our polygraph examinations.)

I have no argument with Mr. John E. Reid that the "Stim-Test" should be used after the first test on the examination and the True Blue Test can be used in that position. Ose of the reasons that I administer the True Blue test immediately after entering on the card the background information from the subject, is to impress him with the idea that half-truths and partial truths will appear on his charts as a complete lie, then give him the opportunity to tell me about it, if he so desires, during the pre-test.

Many times the subject will tell me that there is a half-truth type situation that is bothering him during the pre-test, or a partial truth situation. Sometimes the subject will wait until the questions for the first test have been read to him before commenting about one that is a half-truth or a partial truth. Some will wait until after the first test when they are asked if any particular question on the test bothered them, etc.

Association Fear

Because of "association fear factors," I suggest you may want to use a red 2 (two) and a blue 2 (two) and a red 4 (four) and a blue 4 (four) on your True Blue Test, along with a half-truth and a partial truth leaving out the red one, particularly where you know there were 2 suspects involved in the crime, or where \$200, \$2000; \$20,000 was stolen; two guns were used; two persons were murdered; etc., because "two" would be an "association fear factor" to the guilty, or similarly, four would be an "association fear factor" to the guilty.

In other words you use the True Blue Test as explained and if subject may be one of the guilty, his response to the blue two (a truthful answer) many times will take on a greater significance by an association fear than his lie answer to the red one, even though you are simply asking him about the number two. Of course you cannot use such a response to indicate the untruthfulness of your subject to the issue questions, but I am merely stating what my experience has been using the test.

This situation is usually true where \$200, \$2000, \$20,000, or \$22,000 was stolen and you may have the guilty subject. It isn't something that you must worry about, but you should consider it prior to arranging your True Blue test for a subject.

So, if there is a possibility of an "association fear factor" appearing in the True Blue test, take advantage of it.

* * * * * *

ACCURACY OF THE POLYGRAPH TECHNIQUE WITH AND WITHOUT CARD TEST STIMULATION

By

Louis Senese

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Does the use of the card test increase the accuracy of Polygraph examinations? Some examiners believe the utilization of a card test during a polygraph examination is an outmoded and deceitful method of testing. Conversely, others hold that this test stimulates the subject so significantly that his Polygraph records become more reliable as an indicator of truth or deception. The various beliefs, however, are mostly opinionated, with little or no factual data proving or disproving the effects of the card test. Most Polygraph examiners, as in other disciplines, are influenced by the teaching of their school instructors who either oppose or promote the use of the card test.

The basic belief of those who advocate the use of the card test is that it stimulates both the untruthful and the truthful on the third test, thereby permitting a more accurate diagnosis. The study here described was conducted to ascertain the stimulation effects of the card test, if any, by comparing the first of the test records comprising the examination series—the one before the card test—with the one conducted right after the card test. The specific objectives were to determine (a) if the card test does stimulate a subject on the subsequent test to respond more significantly; (b) if it reassures the truthful subject by helping to accentuate the responses to the control questions; (c) if the stimulation of the card test effects an increase in the responses of the lying subject to the pertinent crime questions; (d) if the use of the card test helps to reduce the number of inconclusive case reports; and (e) if it helps to reduce the possibility of error.

The Reid Control Question Technique procedure places the card test as the second test in a series of several tests. This test is administered by first asking the subject to choose one of seven numbered cards presented to him face down, and, after looking at it, to remember the number and return it to the deck without identifying it to the examiner. The cards are then shuffled and the examiner informs the subject that on the next test he is to answer "no" to all the card numbers he will be asked, including the card numbers he has secretly selected. The examiner explains that the purpose of the test is to determine whether or not the subject will respond to his chosen card, and, if so,

Reprinted with the permission of the author and the <u>Journal of Police</u> Science and Administration, cl976 by Northwestern University School of Law. it will clearly indicate the the subject is also capable of responding to the examination questions. Upon completion of the card test, the examiner informs the subject of the number of his chosen card and receives the subject's assurance that the card identified by the examiner was in fact the card chosen by the subject. After the subject is given sufficient time to evaluate the effectiveness of the card test, the third test (a repeat of the first test) is administered.¹

The instrument used in conducting the Polygraph examinations was a fivechannel Reid Polygraph. However, no attempt was made to determine which recording channel or channels were relied upon by the examiners in arriving at their decisions of truth or deception.

Polygraph records used in this project were obtained from thirty investigations and were submitted to seven staff examiners of John E. Reid and Associates for interpretation. The overall polygraph experience of the examiners was 3.9 years. Types of cases that were investigated were rape, sexual molestation, industrial sabotage, drug investigation and theft. In the thirty cases examined fifteen were verified truthful and fifteen were verified untruthful or lying. The project examiners, however, were not aware that any of the test records had been verified.

The experiment was divided into two phases. In the first phase the seven examiners were given only the first chart prior to the card test from the thirty verified cases used. The examiners were instructed individually to review each separate chart and state their opinion as to whether the subject was truthful cr untruthful, or whether the test responses were inconclusive.

One month later the second and final phase of this research project was completed. In this phase the same seven examiners were given the individual charts that immediately followed the card test. Each examiner was instructed to interpret the records but was not informed as to the accuracy of his interpretation regarding the first one he had examined. As a final restriction, the project examiners were not allowed to see any of the card test charts. In fact, the examiners did not have any knowledge that a card test had been administered.

Results

Results of the first and third chart evaluations were as follows:

Accuracy in correctly detecting untruthful subjects and identifying truthful subjects in the first chart was 55.7 percent. However, after the card test, the accuracy in the third chart rose to 71.4 percent, increasing the level of accuracy by 28.2 percent.

Incorrect judgments of identifying truthful subjects as liars or lying subjects as truthful was 13.3 percent in the first chart evaluation. Incorrect

¹The complete explanation of the card test technique is found in "Truth and Deception, The Polygraph (Lie Detector) Technique," (1966), John E. Reid and Fred E. Inbau. judgment of truthful subjects as lying or lying subjects as truthful in the third chart evaluation decreased to 9 percent, reducing errors by 32.3 percent.

The inconclusive rate, <u>i.e.</u>, the percentage of cases in which an examiner could not evaluate a subject as being truthful or untruthful due to erratic or inconsistent responses, was 20.5 percent on the first chart evaluation. Results on the third chart evaluation after the card test showed a reduction to 14.3 percent for the inconclusive rate, reflecting a 30.2 percent decrase in indefinite results.

Unresponsiveness (i.e., the lack of significant emotional disturbances on the relevant, irrelvant or control questions) was also measured. On the first chart 10.5 percent of the examiners' opinions were that the subjects were unresponsive. Results of unresponsiveness on the third chart evaluation decreased to 5.3 percent, yielding a 49.5 percent reduction in unresponsive results.

Table I summarizes the distribution of judgments from examiners evaluating the first test. This table represents the results of the 30 decisions made by each of the seven examiners, thus totaling 210 decisions. Table II summarizes the results of the distribution of judgments by the seven examiners evaluating the third chart. Table III represents the percent change of distribution of judgments comparing the first test and third test evaluations.

Discussion

These results clearly show that the card test is a valuable stimulation technique. It became evident that the card test does increase accuracy, reduce errors, decrease the number of inconclusive tests and lower the rate of unresponsive subjects.

The most significant change that occurred in this study was a 49.5 percent reduction in decisions indicating that the subjects were unresponsive. This might be attributable to the fact that lethargic subjects became,for the first time, aware of the efficacy of the Polygraph technique. Also, incorrect decisions dramatically decreased by 32.3 percent, showing that truthful subjects became more concerned with the control questions, whereas the lying subjects became more concerned with the pertinent crime questions. Correct decisions in this study increased by 28.2 percent, showing again that the stimulation effect of the card test significantly increased the accuracy of the technique. Indefinite decisions showed a marked reduction by 30.2 percent, indicating that the erratic responder became more clearly identified as being truthful or untruthful.²

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²As to reliability studies involving examiners' decisions after reviewing the full complement of tests before rendering a decision, see, F. S. Horvath and John E. Reid, "The Reliability of Polygraph Examiner Diagnosis of Truth and Deception", J. Crim. L. C. & P.S., 62(1971), 276-281, and F. L. Hunter and P. Ash, "The Accuracy and Consistency of Polygraph Examiners' Diagnosis," J. Police Sci. & Adm. 1(1973), 370-375.

Examiners	Correct Decisions	Incorrect Decisions	Inconclusive Decisions	Unresponsive Decisions	Total Decisions
2 3 4 5 5 7 Total	22 17 14 17 15 16 16 16 117	5 0 1 7 3 5 28	2 11 11 3 4 7 5 43	1 2 4 3 4 4 4 22	30 30 30 30 30 30 30 210
% Average	55.7%	13.3%	20.5%	10.5%	100%

 TABLE I

 Distribution of Judgments from Examiners Evaluating the First Test

TABLE II

Distribution of Judgments from Examiners Evaluating the Third Test

Examiners	Correct	Incorrect	Inconclusive	Unresponsive	Total
	Decisions	Decisions	Decisions	Decisions	Decisions
1 2 3 4 5 6 Total % Average	26 19 25 22 20 20 18 150 71 4%	2 2 4 5 2 3 1 19 9,0%	1 7 0 3 6 5 8 30	1 2 1 0 2 2 3 11 5 3%	30 30 30 30 30 30 30 210

TABLE III

Examiner Percentage Distribution of Judgments Comparing the First Test Judgments without Benefit of Card Test Stimulation Opposing the Third Test Judgments Having Benefit of Card Test Stimulation

	Correct Decisions	Incorrect Decisions	Indefinite Decisions	Unresponsive Decisions
First test results	55.7%	13.3%	20.5%	10.5%
Third test results	71.4%	9.0%	14.3%	5.3%
Difference between first and third test	15.7(+)	4.3(-)	6.2(-)	5.2(-)
Percent change between first and third test .	28.2%(+)	32.3%(-)	30.2%(-)	49.5%(-)

A FAIL-PROOF BLIND NUMBERS TEST

By

Gordon H. Barland, Ph.D.¹

SUMMARY

A numbers test is described in which the examiner does not know which of five numbers was selected by the subject. Strategies for handling both successful detection and misses are discussed, as are possible countermeasures.

INTRODUCTION

The numbers test presented here is one in which the subject knows there can be no trickery, which makes it extremely effective when the examiner correctly identifies the selected number. Yet, even when the examiner does not identify the number, the test has the desired effect because the subject doesn't realize that the examiner didn't have a "hit."

I claim no part in the development of this test. All vital parts were borrowed from other examiners. I am indebted to Ronald Decker for the principle of never lying to the subject and never engaging in deceit or trickery. To Dick Arther I am indebted for the concept of emphasizing that the purpose of the test is to see how each subject reacts when he is known to be answering truthfully, so that no mistakes will be made. A number of military examiners evolved the techniques for handling misses in such a way that the test is nonetheless effective.

PROCEDURE

I have found this test so effective in allaying the fears and anxiety of the truthful, and in increasing admissions in screening situations, that I use it on virtually every examination, both criminal and industrial, usually after the first chart. The phraseology given here is that used with preemployment screening examinations. After completion of the first chart, particularly if there were a lot of reactions or if the subject asks if he reacted, I usually say:

I do see a number of reactions here this first time around. But that's perfectly normal! (Smile reassuringly) Everyone always reacts on the first chart! In fact, in a sense, the first chart is kind of a throwaway chart. It lets a person get used to the test! We know that as long as a person is telling the truth, and not holding anything back, the reactions just die down and disappear with the questions are asked again. In fact, that's

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the law requires that the questions be asked at least twice.²

Jim, before I ask these questions again, I'm going to run a short test completely unrelated to this. (Pause) Jim, I want you to choose a number between, oh, let's say between 2 and 6, so that you can choose the number 2, 3, 4, 5, or 6. Now, don't tell me what number you chose! I want you to write the number down on this piece of paper here. (The examiner then turns away.)

I'm going to turn my back to you, so I can't see what number you write. After you have written it down, I want you to fold the paper in half (Pause) and tuck it under your leg. (Pause) Let me know when you have that done.

After turning back to the subject, the examiner continues,

Now, I'm going to ask you a series of questions about the number you just wrote down on that piece of paper. (Smile broadly) I'm going to ask, 'Jim, did you write the number one? Did you write the number two?' And so on, all the way, right on up. Now, what I want you to do is to answer all questions 'no.' (Smile) Obviously, you are going to be answering most of the questions truthfully. But somewhere along the way I'm going to be getting to the number you actually did write down, and I want you to answer that 'no,' also! (Pause) Do you understand? (Pause, answer any questions.)

After I've asked them once, in sequence, I'm going to ask them again, but this time out of sequence, in a random order; you'll never know what number is coming next! Again, answer all questions, 'no.' Then, I'm going to have some new instructions for you, at which time I want you to be sure to follow the new instructions! (Pause) Do you understand? (Pause, answer any questions.)

The examiner then instructs the subject to sit quietly. He activates the polygraph and starts the test. While massaging the BP cuff, the final instructions are, "Remember to answer all questions 'no' until further notice." The test then starts:

Jim, regarding the number you just wrote down on that piece of paper tucked under your leg, did you write the number 1?

Did you write the number 2? Did you write the number 3? Did you write the number 4? Did you write the number 5? Did you write the number 6?

²The Utah licensing law requires a minimum of two charts in screening situations and three charts in criminal cases before the examiner is legally permitted to make any decision regarding the subject's truthfulness.

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I'm going to repeat the numbers now, in a random order. Continue to answer 'no' to all questions.

Did you write the number 6?

Did you write the number 4? (Examiner's first choice)

Did you write the number 2?

Did you write the number 3? (Examiner's 2nd choice)

Did you write the number 5?

Jim, here are the new instructions I mentioned. (Pause) I want you now to answer all questions truthfully, (pause) with either a yes or a no, depending upon what the actual truth is. (Long pause) Do you understand? (After subject indicates understanding, the examiner continues)

Did you chose the number 4?

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(If the subject answers, 'yes,' the examiner replies that the test is over, and deactivates the polygraph. The other contingencies will be described below. The results are then reviewed with the subject, as follows.)

May I have the slip of paper please, (smiling broadly) just so that you know that I didn't sneak a look at it! (Verify number, discard the slip, then study the chart intently for about 10 seconds.)

Jim, I have on this chart here a picture of exactly how your body reacts, when I know, absolutely and positively, that you are telling the complete truth! (Pause) After all, you answered all of the questions completely truthfully ... except for the first two times I asked about the number four! So we're not going to make any mistakes with you today!

(Note: at this point the examiner may wish to reinforce this with any of several observations, such as pointing out that everybody is just a little different, just like there are no two fingerprints that are exactly the same. But this chart shows us exactly how his body looks when we know he is telling the complete truth. The examiner might also point out how sensitive the body is to what's going on in the mind, even about something as trivial and unimportant as a number on a piece of paper; he can imagine how obvious it is if someone is lying about something important. This latter approach should probably not be used where the charts have a lot of spontaneous reactions. I usually do not amplify the test results at all at this point, being content to let the subject draw his own conclusions.)

In screening examinations, the transition to the next chart is as follows: I'm going to go back now and ask those other questions again. (Long pause while I study the numbers test chart and glance at the first chart.) You've had more of an opportunity to think about the questions I was asking. (Pause) Is there anything you thought of that you forgot to mention before? (If the subject says 'no,' the examiner continues smoothly) Are you all set for me to ask them again?

GENERAL SUGGESTIONS

It should be noted that the numbers test is all one chart, with no pause between any of the three parts (straight through, randomized, and "Now answer truthfully.") In order to minimize cuff discomfort, I generally run at a slightly lower pressure than normal, and have only a 10-second pause between questions. Shorter inter-question pauses are not advisable, because it makes it more difficult to accurately interpret the charts. At the point where I tell the subject I am going to repeat the questions in a random sequence, I mark RPT (for repeat) on the chart. Similarly, I mark NAT (for not answer truthfully) when I start to give the instruction during the test.

During the test, I watch the subject's face for any unusual expressions. Experience has shown that most subjects choose the number 4. Consequently, if research is to be done using this technique, it is necessary to ensure that the selection of numbers is completely randomized. That can be done by using the numbers 2 through 6 from two decks of playing cards, resulting in a total of 40 cards from which the subject can choose $(2 \times 4 \times 5)$. The use of cards should be avoided, however, when no research is involved, since the subject may feel that the test had been rigged, which would reduce the value of the test. Possible research topics include the effect on detectability of the subjects' age, sex, level of stress (pre-employment vs. criminal suspect), belief in the accuracy of the polygraph, etc.

I generally do not show the charts to the subject following the numbers test. My experience has been that in a significant number of cases, the subject appears disappointed at the seemingly small reaction to the critical number, because he had imagined that "lie detector" results are more dramatic. If the subject does ask to see the chart, I reply that I will be happy to do so as soon as all of the testing is completed.

During the middle phase when the questions are repeated, there are several guidelines that may be followed when randomizing the numbers. Based upon the reactions observed during the first portion, the least likely number should be put in first place to serve as a buffer. (To shorten the test, the number "1" should not be repeated). The most likely number is then put in second place, followed by the second most unlikely number. The examiner's second choice is then put into the fourth position, followed by the only remaining number. If the examiner's first and second choices are consecutive numbers, then they should be reversed and separated by a neutral number.

HOW TO HANDLE MISSES

During the final, "now answer truthfully," stage, there are three possible outcomes. The examiner's first guess may be correct, his second guess

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may be correct, or neither may be correct. A somewhat different strategy is followed for each of these contingencies. It is important to observe that at no time during the procedure has the examiner ever indicated, either directly or indirectly, that he is going to correctly determine which number the subject selected. In the first two contingencies, the subject generally assumes that that was the purpose of the test, and that the examiner has successfully determined the correct number. If the examiner's first choice was correct, the test is concluded immediately as described above.

If the subject answers "no" to the first choice, the test continues. It will be recalled that the "now answer truthfully" instructions had been, "here are the new instructions I had mentioned. Jim, I want you now to answer all questions truthfully, with either a yes or a no, depending upon what the actual truth is. Do you understand?" In the example here, we will assume that the examiner's first choice was number four, and the second choice is number three. Once the subject answers "no" to the first choice, the examiner puts his second choice to the end of the sequence and attempts, where possible, to have a logical sequence from the first choice to the second. In this case the NAT sequence would be as follows:

"Did you choose the number four?" No. "Did you choose the number five?" No. "Did you choose the number six?" No. "Did you choose the number one?" No. "Did you choose the number two?" No.

You will have observed that I have now repeated all of the numbers ... except for one. I will now ask that one. Did you choose the number three?" "Yes." The subject thus assumes that the examiner knew the correct number all along. The examiner then continues on as described above, by asking for the piece of paper, "Just so that you know I didn't sneak a look at it."

The third contingency is that the subject answers "yes" to some number not anticipated by the examiner. Fortunately, this happens in only about 10% of all tests. If that occurs, the examiner continues the sequence as described under the preceding contingency, except that he omits the comment about having repeated all numbers except one, and does not make any remark about not sneaking a look at the slip when he asks for the paper. The examiner does scrutinize the chart, then emphasize that the chart shows him how the person reacts when he is known to be telling the complete truth. It has been my experience that the subject almost never seems to suspect that anything unusual has happened. In the very rare event that the subject asks whether the examiner had known what number the subject had picked, the examiner should reply that he will be happy to go over the results of the tests as soon as all of the testing is completed. Following completion of the examination, the examiner should bring up the subject of the numbers test, indicate that he had not known what number the subject had selected, and debrief the subject concerning the tests. Occasionally the result was due to countermeasures, and the resulting information increases the examiner's competence in administering and interpreting such tests.

COUNTERMEASURES

Surprisingly few subjects attempt any obvious countermeasure on the test. Although I have not kept records on this, it seems to be less than one subject in twenty. Other than the conventional countermeasures such as moving around or breathing erratically, there are several types of countermeasures unique to the numbers test. The single most common type is for the subject to answer "yes" to his selected number during the initial, "straight through" sequence as if nothing had happened, after which he would terminate the test without repeating the questions in a randomized sequence. After quizzing the subject about why he had not followed instructions, he would then continue with the "Now I know how your body reacts when I know you're telling the truth" advice. This can be especially effective on the subject who had hoped to disrupt the test by his countermeasure. Alternatively, if the charts are also disrupted by excessive movement following his "slip of the tongue," the examiner may wish to terminate the chart immediately, instruct him to select another number (say, between 11 and 15), and repeat the test.

Another fairly common countermeasure among those who attempt them, is for the subject to answer "no" to all numbers in the third, "now answer truthfully," phase. When it is apparent that that has happened, if the examiner is fairly certain what the critical number is, he may repeat the NAT instructions followed by the critical number again. Otherwise, the examiner may terminate the test as usual, look at the number on the slip of paper, and continue normally.

The remaining possible countermeasures are almost never encountered. The subject may answer "yes" to the wrong number, or may pick a number other than one of the five permitted by the instructions, such as a 1 or 7. One subject later mentioned he was going to select a fraction, but did not.

The examiner may wish to invite the subject to attempt to "beat the test" by trying to suppress his reaction to the selected number, so that the charts will be flat all the way across. By directing the subject to try to make flat charts, it may be possible to increase the detectability of the selected number. I give this instruction whenever the subject has mentioned, during the pretest interview, that he considers it possible to beat the test, or when I am re-examining a subject on whom I have previously administered the numbers test.

CONCLUSION

The examiner who has never tried a blind numbers test before usually feels very inadequately in doing so, and often feels that it must be very difficult to do it successfully, or recover properly from a miscalled number. In actual practice, this type of test is surprisingly easy to manage, and can have a profound effect upon the attitude of the person being examined. It often is the one aspect of the polygraph longest remembered by the subject, particularly if he had been unusually nervous about taking the test because he was very concerned about the possibility of a false positive error.

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STIMULATION PROCEDURES: A CONSERVATIVE VIEW

Bу

Raymond J. Weir, Jr.

I do not believe that it is wrong per se to use so-called stimulation (stim) tests or that there use invariably has an adverse effect on every polygraph examination. On the other hand, I have always been very conservative in my viewpoint toward these tests, and I certainly do not believe that a multiple series of stim tests should be employed routinely in each examination. I suggest that serious examiners, who hold their operations under continuing review, might wish to consider the problems which can be created by these tests and to balance the expected gains against the potential losses. In my own operations I tend to employ them only as a last resort to prevent an inconclusive examination.

The primary rationale behind the use of card tests, numbers tests, and similar procedures is that they simplify chart analysis by clarifying reaction patterns. The hypothesis is that the natural skepticism of the guilty Subject will be destroyed by the overwhelming evidence that the instrument works properly on him. In addition, an opportunity is provided for the guilty Subject to try to sabotage the test. There is overwhelming evidence from the field that the procedure works, although I might quibble a little and point out that in many instances charts can be read accurately both before and after enhancement procedures.

Since there is certainly evidence that stimulation tests can relieve the anxiety of the innocent suspect while destroying the bravado of the guilty person, why not endorse their routine use in every polygraph examination? The trouble is, that in polygraph work there seems to be no such thing as an unmixed blessing. A procedure which provides valuable data on the one hand often has adverse effects when examined from another point of view. Let us look at the negative side of stimulation tests, in general, before suggesting procedures which have proven effective from time to time in Relevant/Irrelevant (R/I) testing.

First of all, the use of card tests and such may detract from the professional image of the examiner. All of us, in our dress, in our demeanor, in the furnishing of our examination suite, put forward an image of professional competence. We try to instill confidence on the part of the Subject in order to reduce nervous tension. This may not always be accomplished by asking the Subject to pick a number or a card. After all, we think of card tricks as tricks. The person is going to do something apparently impossible, but we know it will not be done honestly. It will be accomplished by a trick. I suggest that even the appearance of trickery is something that we should wish to keep as far as possible away from our examinations.

Mr. Weir is Past President of the APA, a retired Federal Examiner who is now in private practice in Washington, D.C. For reprints write to him at 1038 Evarts St., N.E., Washington, D.C. 20018. For additional views on R/I examinations, the reader is referred to the author's article "In Defense of the Relevant/Irrelevant Polygraph Test," <u>Polygraph</u> 3(2)(June 1974): 119-166. Second, the stim test can lessen the confidence of the Subject in the examiner. The subject may well be thinking, "Why should he have to ask me to pick a card to determine if the instrument works all right on me? Isn't he able to tell without playing parlor games? Suppose it doesn't -- is he competent?"

Third, stim tests may reduce the confidence of the Subject in the instrument. We raise the horrifying prospect that the instrument might not work right or might not work on the Subject. When the Subject has his employment and even his liberty riding on the outcome of the examination, it is hardly reassuring to be told that the instrument can malfunction. We live in a machine society, and each of us is acutely aware that machines can go wrong, and usually do at the most inopportune moments. It is wise not to bring up the possibility of instrument malfunction.

Fourth, even when stim tests do not tend to reinforce fears on the part of the Subject, they can create resentment. It may very well appear to the Subject that the examiner is playing games with him or using him as a guinea pig in research having nothing to do with the subject matter of the test. We tell him to pick a card or number, to answer questions silently, to answer all of them yes, and that these have some bearing on the outcome of his examination on having committed the offense for which he is being tested. I can see easily where the Subject could resent these procedures, especially when they begin to occupy a disproportionate part of the total testing time.

This leads to the fifth consideration: a lengthy series of stim tests can use up a good part of the Subject's best reaction time. Cleve Backster studied and reported the concept of Total Chart Minutes, and suggested that there were definite time limitations upon the reactivity of the physiological processes we record on the polygraph. While I do not concur completely with the actual chart minutes he reported as being the maximum for the pneumograph, the galvanograph, and the cardiosphygmograph, I am in complete agreement with his primary thesis: that reactivity tends to lessen progressively as habituation and fatigue increase over a series of charts. I submit that it makes more sense to use the Subject's best reactive periods in direct efforts to resolve the primary relevant areas.

Our problem with stimulation tests is that not all examiners are experienced. The experienced examiner should be able to see after his first chart whether stimulation procedures might be required. He can select from many with which he is familiar and apply sparingly only those which seem to be essential. The inexperienced examiner is frequently unable to make this judgment, and he uses all of them he knows on the theory that you cannot have too much of a good thing. The trouble is that you can have too much of a good thing in polygraph work. The Subject becomes enervated after five stim tests and does not react to the relevant questions on chart six or seven. Depending on his skills in chart reading the examiner comes up with an inconclusive or sometimes an erroneous conclusion.

One argument advanced for the use of stim tests is that they provide an opportunity for the guilty Subject to try to sabotage the test by false

selections, exaggerated reactions, and movements. This is probably all very true, but his guilt or innocence should be more apparent in his reactions to the relevant questions, or in the comparison between them and the controls, if this is the technique you use. I tend to believe that our skill as polygraph examiners was developed in order to eliminate the need for the psychological gamesmanship represented by some of the stimulation tests in widespread use. Any examiner worthy of the name should be able to tell from his charts whenever some character is trying to distort the charts. Should we all go back to basic training and study the differences between controlled and natural breathing, legitimate rises in blood pressure and those caused by surreptitious pressure or squeezing a spincter?

I think we all need to keep in mind that the majority of reasonable Americans have granted rather grudging approval for the use of the polygraph in areas where truth is really a matter of importance. They have most decidedly not granted us approval to experiment or to play games with people who have something important in jeopardy.

An excellent example of the effect of carrying reasonable procedures to excess occurred several years ago among a group of military examiners working in isolation in an overseas area. This group carried a regulatory requirement to make the Subject aware of the functioning of the instrument and the psychology and physiology of lie detection to absurd extremes. Each Subject received a two-hour detailed lecture on physiology and psychology in addition to a routine pretest interview. Held under stress all this time waiting for the beginning of the test, it is small wonder that a substantial part of their examinees were unfit for testing. To cap it all, these men administered numbers tests as the first tests. If the examiner was unable to pick the selected number, he concluded that the Subject was unfit for testing, and postponed the examination to another day, never realizing that the excessive length of the pretest interview might have contributed to the Subject's unresponsiveness. This technique also ignored the obvious fact that the autonomic nervous system stimulation created by a numbers test need not necessarily be comparable to the stimulation of a meaningful test. To dismiss the Subject without having run at least one meaningful chart was clearly unsound procedure. These and similar experiences probably contributed heavily to the decision by the Armed Forces to institute centralized quality and policy control over all polygraph operations.

The purpose of the foregoing discussion was to emphasize that, although there are undeniable benefits to be obtained from the judicious use of stimulation procedures as thought at most of the schools, there are potential drawbacks which can also result from the routine use or misuse of these procedures. The application of such procedures to Relevant/Irrelevant testing is not difficult. Indeed, the greater flexibility of the R/I test makes the insertion of stimulation procedures relatively simple.

I speak of "stimulation procedures" rather than "stimulation tests" because I recommend that such techniques be made a part of a regular test rather than isolated on a separate chart. During the R/I pretest question review the Subject is told that both the relevant and irrelevant questions may be broken down and/or paraphrased. He is also told that he might be asked questions designed to reveal whether he is concentrating on his answers and cooperating with the test procedures. This gives us plenty of latitude to do what might be necessary to overcome trickery or unresponsiveness on the part of the Subject.

The first instruction as regards stimulation procedures for R/I testing is that under most circumstances, the examiner should do nothing. The vast majority of examinees react within a rather wide range of patterns which we would characterize as normal—and stimulation procedures are unnecessary in such cases. In any event, I recommend strongly against the use of card tests, number tests, and similar tests because they are fatally flawed by the inevitable atmosphere of trickery which accompanies them. I would rather not take a chance on having the Subject lose respect for the examiner and the examination.

On some occasions (again relatively rare) the examiner will note during the first chart that the Subject appears to be relatively unreactive, creating the possibility of a nonreactor and an inconclusive examination. In such cases it is recommended that the examiner reverse a couple of figures in an irrelevant question regarding the Subject's address or date of birth or make some other apparent mistake in asking one of the irrelevant questions. The Subject will frequently react to the mistake in the question, after which it is recommended that the examiner say, "I beg your pardon," and ask the question properly. If the Subject reacts to the reversed norm question, no further stimulation procedures are necessary. We have established that he can react to a verbal stimulus without destroying his confidence in us, the polygraph, or the test procedures.

If he does not react to the reworded irrelevant question, I recommend taking no further action during chart #1. In between chart 1 and 2, in the case of flat charts, the examiner may review the questions and their included areas again briefly with the Subject to be sure he understands them. The importance of listening to the questions and cooperating should be stressed. The examiner may check once again about medication taken by the Subject and may advise that a question verifying this may be included on the next chart. The examiner may also review once more the importance of the test to the Subject, emphasizing what he has to gain by honesty and to lose by dishonesty or lack of cooperation. This should be done, however, as if it were a routine part of every polygraph examination. I do not believe that it is routinely desirable to create apprehension on the part of the Subject that the instrument might not be working right or that it might not work right on the Subject.

This is about all that I would recommend in the case of relatively unresponsive Subjects. If he remains unresponsive during chart 2, the examiner should insert a major control question at the end of chart 2. If the Subject reacts to this control, but not to the relevant questions, he should be reported as truthful. If he fails to react to the control (two or three may be used) he should be reported inconclusive because he was a nonreactor. When the examiner suspects the lack of reaction might have been induced artificially, he might insert verifying questions in this area during chart 2. These might be such as the following:

Have you taken any drug or medicine to try to beat this test?

Have you taken any steps to try to beat this test?

Are you deliberately doing anything to try to beat this test?

The examinee who has successfully prevented any reactivity up to this point through physical or mental conditioning will often react to questions indicating that his efforts have been detected.

Far more of a problem in R/I testing are the relatively frequent occasions where, through genuine excessive nervous tension, or through efforts at deception the Subject reacts to everything, relevant and irrelevant questions alike. Or he may sometimes show strong, but inconsistent reactions to one or more of the relevant questions. The problem here is to dissipate the reactions caused by excessive GNT and to localize to the relevant questions any reactivity arising from attempted deception. If we enlarge the scope of "stimulation" procedures to include also efforts on the part of the examiner to localize reactions and to facilitate chart analysis, there are several techniques which work well in R/I testing. I suspect that most successful examiners, regardless of basic techniques, already use these or similar procedures to assist in resolving problem charts. Permit me to reiterate, however, that in R/I testing the procedures, when required, would be incorporated in a regular chart, quite as if there were nothing special about them.

It is not at all unusual for a Subject who is reacting to everything to claim that he feels accused, and it is the entire test procedure rather than the relevant questions which causes him to react. In such cases it is often helpful to run a "No Question" chart. The examinee is told that his reaction to the testing situation is perfectly understandable--that many sensitive and intelligent people feel this way. (A little flattery never hurt.) For the first minute of the next chart the examiner will ask no questions whatever, and it will be possible to ascertain from the chart the Subject's basic reaction to the polygraph instrument. At the end of the minute, the examiner will say, "I am now going to begin the regular test questions," and will proceed with the test. If the Subject is relatively relaxed during the no-question part of the chart, but goes to pieces at the time of the announcement that the regular questions will begin, the examiner has a strong presumption that the relevant questions, and not GNT are the source of the problem.

Another area where the flexibility of the R/I test provide an advantage, particularly in pre-employment and screening examinations, is that the technique permits the examiner to go into a searching peak as soon as he has indications that the Subject may be reacting to one or more of the general areas covered by the relevant questions. Of course, the examiner has gone into the lesser included topics covered by each relevant question and has indicated during pretest interview that these questions may be asked during the test. It is very helpful to be able to pinpoint the source of the reaction as soon as possible. I usually run through the searching peak twice. If there seems to be no problem during the first run through, I say, "I am now going to repeat those questions in the same order." If there appears to be trouble on the first run through, I may stimulate the Subject by saying, "I am not going to repeat those questions in the same order, to be sure of what I'm getting ..." That last phrase will often intensify the Subject's reactions and will sometimes pave the way for a confession. One exception to the general rule about incorporating stimulus procedures into the R/I test might be the use of the single topic test. Its use is indicated on those occasions when an examinee claims general sensitivity to the subject matter of one or more of the test questions rather than to his answer to the questions. This will be most frequently encountered on those occasions when sex questions have to be covered. The examiner must be most careful with such an examination, since there are only a few instances when the inclusion of sex questions on a polygraph examination would be justifiable. The first would obviously be in a specific test covering a sex crime. Another case might be the screening situation where the applicant will exert authority over others, such as prison guards or police officers. A person with a history of sadism or perversion in such jobs would be undesirable. Perhaps the final instance might be applicants for jobs where susceptibility to blackmail is of supreme importance, such as those positions where high-level security clearances are required.

In any event, sex areas are difficult to verify with a polygraph, primarily because they are emotionally-loaded for the average person, and the instrument, after all, does record emotional reactions. It is common for the Subject to say that sex is a very sensitive topic with him. and that is the only reason why he is reacting. One effective method of clarifying this area is to tell the Subject that all of the questions on the next chart will be about sex, so that whatever reaction he has to the general topic will apply equally to all of them. He will be asked so many things that he couldn't possibly have done all of them. If he does indeed react the same to all of them. you will be happy to believe him; but if he reacts differently to one of them, you will be forced to believe there is something wrong in that area. In such a case your single topic test would have no irrelevant questions, but might include questions about sadism, masochism, homosexuality, heterosexual perversions, and so on to the point where it would be exceedingly unlikely that one person could have been involved in all of them. The test might well be viewed as a searching peak in one particular area, with only limited repetition because of the wide scope of the questions. Single-topic tests can be quite effective, both to pinpoint the area of sensitivity and to prepare the way for interrogation.

Of course, if the examiner is a devotee of stimulation tests, most of those in standard use can be incorporated in R/I procedures, if the examiner insists. A "Yes" or a "Silent Answer" test can be used, but even for these tests I would recommend making them the first or last segment of an R/I test. This certainly facilitates the comparison between the stimulation procedure and the regular procedure under constant conditions. Although I recommend against the use of card tests or numbers tests, these could be run as separate tests as chart 2. I would prefer to isolate these and hope that any adverse reaction to them would be separated from the regular test.

In summation, I suggest that stimulation procedures be employed only in those relatively few examinations where their use is necessary to prevent an inconclusive examination. Their routine use may unnecessarily create or increase examinee resentment and/or apprehension. If they are to be used in R/I testing, it is suggested that they be made part of a regular chart rather than isolated on a separate chart. Numbers tests, card tests, or other tests which give the appearance of parlor games or trickery should be avoided.

* * * * * *

AN EXPERIMENTAL INVESTIGATION OF THE RELATIVE VALIDITY AND UTILITY OF THE POLYGRAPH TECHNIQUE AND THREE OTHER COMMON METHODS OF CRIMINAL IDENTIFICATION

Ву

J. Widacki¹, Ph.D. and F. Horvath², Ph.D.

Although the polygraph ("Lie detector") technique is frequently used for other purposes its major application is in criminal investigation and identification. In such applications even the harshest critics acknowledge the usefulness and potential of the technique(1). Nevertheless, there is still considerable controversy with respect to practitioners' claims that the technique has a nearly perfect validity (2,3). The research reported to date, although suggestive of very high validity, does not compellingly demonstrate the the validity, at least in field situations, is as high as practitioners claim (4,5). None of that research, however, whether laboratory- or field-based, examined the validity and utility of the polygraph technique in comparison to other commonly used methods of criminal identification. The need for such a comparison was made explicit by Reid and Inbau (6, p.v) in their claim that the polygraph technique "possesses a degree of accuracy commensurate with, and even superior to, most of the presently approved forms of evidence, scientific as well as non-scientific, that feature in criminal and civil trials."

The purpose of the present study was to investigate the claim made by Reid and Inbau (6) and, specifically, to assess the utility and validity of the polygraph technique in comparison to fingerprint identification, handwriting analysis, and eyewitness identification. Although this study was carried out in a laboratory context, generally believed to decrease the effectiveness of the polygraph technique (4,5), that context ensured that "ground truth" was known and that the circumstances in which data were collected were similar in nature.

METHOD

Subjects

Eighty student volunteers, all enrolled in Jagiellonian University, Kracow, Poland, were recruited to serve as subjects. The age range for these

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Reprinted with permission from the Journal of Forensic Sciences, July 1978. Copyright American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pa. 19103. subjects was from 19 to 24, with a mean age of 21. Forty-two of the subjects were males; 38, females.

Procedure

Upon being recruited all subjects provided a confederate of the researcher with handwriting specimens, full-face photographs, and fingerprints. Handwriting specimens were obtained by requiring each subject to write ten times the phrase "I acknowledge the receipt," his own signature, and the date on an exemplar sheet. A photograph (approximately 6 by 10 cm) of each subject was made by reproducing the photograph on student identification cards. Finally, each subject's ten fingerprints were taken by a qualified research assistant on fingerprint cards on which the subject's name and experimental group assignment were indicated. The handwriting specimens, photographs, and fingerprints were to serve as exemplars for analysis of evidence collected in the research.

After collecting the exemplars the confederate assigned the subjects to 20 groups of four subjects each. Ten of the groups consisted of all male subjects; nine, of all females; and one, of two males and two females. Within each group one subject was randomly assigned the role of "perpetrator" in each of 20 similar "investigative cases" which were independently carried out. The remaining three subjects in each group were assigned the role of "innocent suspects." None of the four subjects in each case was made aware of the role assigned to the other subjects in that case.

The perpetrator was given a sealed envelope containing his instructions. He was required to open the envelope, read the instructions inside, and then carry out the assigned task. The task for all perpetrators consisted of collecting a parcel from one of two persons recruited to act as the doorkeeper of a local building. Upon arriving at the building the perpetrator gave the envelope and the instruction sheet to the doorkeeper, who, after obtaining the envelope, required the subject to complete a receipt form by signing "I acknowledge the receipt," along with a handwritten signature of a fictitious name. The doorkeeper then gave the perpetrator a parcel containing an imported cosmetic of small value. All perpetrators were told in advance that the receipt form was to be used as a means of identification and thus they were advised to try to deform their handwriting.

All subjects, whether innocent suspects or perpetrators, were told that they were to undergo a polygraph examination to determine their role in the cases. They were advised to maintain complete secrecy about their role until the experiment was over. In addition, each perpetrator was advised that if he could successfully defeat the polygraph examination he could keep the cosmetic item contained in the parcel secured from the doorkeeper. Innocent suspects were advised merely to appear innocent and to do nothing to mislead the examiner; they received no reward for their participation.

Upon completion of the assigned task, the perpetrator and innocent subjects in each case were given polygraph examinations. The examinations were carried out blind: the examiner was not aware of who had been assigned the role of perpetrator or of innocent suspect in any case, although he was aware of the four suspects who were assigned to the same case. Examinations were done with a standard field-model polygraph, a fourchannel Lafayette Model 76058, in accordance with Reid Control Question procedure (6). That procedure essentially consists of a pretest interview and a series of polygraph tests. Because the interview, testing procedure, and evaluation of the physiological data have been adequately described elsewhere (6,7) they will not be detailed here. However, it should be noted that there was no attempt made to determine which physiological measure recorded by the polygraph (respiratory, cardiovascular, or electrodermal activity) was the most effective nor to determine the influence of the examiner's subjective impressions of the subjects' behavioral characteristics on his decisions of truthfulness and deception with respect to the subjects' roles. In all instances, the examiner conducted polygraph examinations on each of the four suspects in a case before he rendered a decision as to which suspect had been the perpetrator.

Independent of the polygraph examinations, three other methods of identification were carried out based on the evidence gathered in each of the 20 cases. First, a fingerprint expert (Criminalistics Department, Jagiellonian University, Kracow, Poland) applied the aerosol ninhydrin method to discover fingerprints on the envelope and the instruction sheet which each perpetrator had given to the doorkeeper. It was assumed that the procedure requiring each perpetrator to handle the envelope and contents would ensure the presence of the perpetrator's fingerprints on at least one of those documents. The expert's task, of course, was to select from the set of fingerprints of the four subjects in each case those which were the prints on the evidence. The expert was aware of the four subjects assigned to each case; he was asked to discover fingerprints on the evidence and then to determine, in each case, which of the four subjects' prints matched those on the evidence. In all instances the criterion for a match was a minimum of seven characteristic details.

Examination of the handwritten signature and the phrase "I acknowledge the receipt" on the form signed by each perpetrator when obtaining the parcel from the doorkeeper was carried out by a local (also at Jagiellonian University) hand-writing expert. He, like the fingerprint expert, knew which four subjects were assigned to the same case and was given all exemplars of those subjects gathered at the outset of the research. His task, of course, was to match the handwriting on the receipt with the proper exemplar in each case.

The role of eyewitness was assumed by two doorkeepers, each of whom alternated in that role such that each saw and talked to ten perpetrators. Two days after the perpetrator collected the parcel the appropriate eyewitness was shown photographs of the four suspects in each case and was asked to identify the subject who had been the perpetrator. The eyewitnesses, of course, were both confederates of the researcher and had advance knowledge of their role in this research. It was assumed that each of them would be equally capable of identifying perpetrators from photographs after having talked to and observed the perpetrators for about 2 min.

Results

Table 1 displays the distribution of the decisions made in each of the identification methods for the 20 independent investigative cases. As shown, the number of correctly resolved cases (those in which the perpetrator and thus the three innocent suspects were correctly identified) was the greatest for

the polygraph examiner, followed, in order, by the handwriting expert, the eyewitnesses, and the fingerprint expert; excluding inconclusive cases the percentage of correctly resolved cases was 95, 94, 64, and 100%, respectively. If inconclusive cases are included the percentage of correctly resolved cases was 90, 85, 35, and 20%, in order, for polygraph, handwriting, eyewitness, and fingerprint identification.

	Decisions				
Identification Method	Correct	Incorrect	Inconclusive		
Polygraph	18	1	1		
Handwriting	17	1	2		
Eyewitness	7	4	9		
Fingerprint	4	0	16		

Table 1 - Distribution of case decisions made in each identification method^a

^aNote: By using the binomial distribution and excluding inconclusive cases, the number of correctly resolved cases was significantly greater than chance ($P \leq 0.05$) for all identification methods.

By treating each case as an independent trial and excluding all inconclusive cases the number of correct case resolutions was significantly ($P \lt 0.05$) greater than chance for all identification methods (with the binomial distribution where probability of success = 0.25).

It is not appropriate to compare the case resolution for each identification method, particularly since the nature and availability of the evidence in each method was quite different. However, the utility of each method can be discerned from inspection of the inconclusive cases. In 16 cases the fingerprint expert was unable to discover any prints sufficient for the identification of the perpetrator in those cases. In 9 cases the eyewitnesses were unable to state with certainty who of the four persons in each case had been the perpetrator nor to eliminate definitely any of the innocent suspects. The handwriting expert was unable to match the perpetrator's handwriting with any of the exemplars in two cases. Finally, the polygraph examiner, yielding one inconclusive case, correctly identified two of the innocent suspects was innocent and which was the perpetrator.

In each of the 20 investigative cases for each identification method an incorrectly resolved case indicated both a false positive error (classifying an innocent suspect as a perpetrator) and a false negative error (classifying a perpetrator as an innocent suspect). To determine the distribution of false positive errors for each identification method the ratio of the number of such errors to the total number of definite decisions made was calculated.

As indicated in Table 2, the percentage of false positive errors was greatest for eyewitness identification followed by handwriting analysis,

polygraph examination, and fingerprint identification: 9.1, 1.4, 1.3, and 0.0% respectively. The result for the polygraph method reflects the two correct decisions made in the one unresolved case.

Discussion

Although it was possible to determine the validity of the decisions made in each identification method, comparisons between those methods, as well as interpretation of the results, are complicated by methodological and other problems. For instance, in spite of the fact that each perpetrator was required to handle the evidence, that procedure was not adequate to ensure that identifiable fingerprints would be found. In fact, the expert was unable to detect such fingerprints in the majority of cases. Moreover, because this research was laboratory-based, the results cannot necessarily be generalized to the reallife situation. It seems reasonable, however, to assume that of the various methods investigated the polygraph technique was the most disadvantaged by the laboratory context. The physical evidence on which the handwriting and fingerprint experts and the eyewitnesses based their decisions was collected and analyzed in rather auspicious circumstances which would appear to work in favor of those methods, whereas it is generally recognized that the polygraph technique is less effective in laboratory situations than in real-life circumstances, apparently becuase of the lesser "fear of consequences" in the former situation (4.5).

Table	2	-	Distribution	of	false	positive	errors	made	in	each	identifi-
			cation method	ł.							

Identification Method	Definite Decisions Made, n	False Positive Errors, %	
Polygraph ^a	78	1.3	-
Fingerprint	16	0.0	
Handwriting	72	1.4	
Eyewitness	44	9.1	

^aIncludes two correct classifications of innocent suspects in the one unresolved case.

For the reasons expressed above, as well as for the other obvious reasons, our findings must be viewed with considerable caution. Nevertheless, several important points deserve mention. First, with respect to the accuracy of the polygraph examiner's decisions our results were generally consistent with those reported in most previous research (4,5); the polygraph examiner's decisions were highly accurate. In fact, the examiner's accuracy in this study was somewhat higher than that which has been reported in most previous laboratory-based studies. The most likely explanation of this finding is that a closed trial method was used in this study. The polygraph examiner, as well as each of the other experts, was presented with four suspects in each case; only one of those suspects was known to be guilty, that is, a perpetrator. That method, which is not typically analogous to the real-life situation nor to the typical method used in previously reported research dealing with the polygraph technique, probably facilitated decision-making and enhanced the examiner's accuracy.

Second, with respect to the accuracy of the fingerprints and handwriting experts and the eyewitnesses, only a very parsimonious discussion is in order. Although all three of those methods yielded reasonable accuracy rates, our results suggest that eyewitness identification was not, and probably is not in real life, a particularly effective means of identification. In this study, unlike the real-life situation, the eyewitnesses had advance knowledge of their role, made identifications based on contemporary photographs, were relatively uninfluenced by emotional involvement in a criminal offense, and made identification within a reasonable time following the "offense." Yet the success of the eyewitnesses in making definite decisions was not impressive. In short, as has been commonly acknowledged, eyewitness identification is probably quite limited in usefulness and effectiveness (8-10).

Third, although it is inappropriate to make direct comparisons of the accuracy rates in each of the identification methods, our results, considered along with previous research, do at least suggest that the accuracy of the polygraph technique compares favorably to that attained by the other methods investigated. Moreover, it is evident from the case resolution rates that the polygraph was particularly useful relative to the other methods: the polygraph technique vielded a relatively low number of unresolved cases and a high number of correct decisions. Although that result was probably not uninfluenced by the closed trial method used, it is reasonable to suspect that that advantage is peculiar to the polygraph technique not only in this research but also in the real-life situation. The other identification methods investigated in this study, and those most frequently used in real-life situations (11), are generally dependent on the discovery of some form of physical or other evidence (such as a fingerprint or an eyewitness) which may either inculpate or exculpate a suspect. The polygraph technique is not necessarily dependent on such evidence, even though it may be helpful (6). Thus, what our results suggest is that in comparison to certain other common methods the polygraph technique is a unique and relatively valid method of criminal investigation and identification.

In summary, it is important to emphasize again that in actual criminal investigations it is seldom that one of a given group of suspects is known to be guilty, and thus the closed trial method used in this research was not necessarily similar to the real-life situation and its use probably stacked the odds for correct detection in favor of the experts. Nevertheless, our findings do support the claim of practitioners that relative to other methods the polygraph technique is particularly valuable for resolving criminal investigations. Further, we believe that the comparative approach taken in this study is especially useful for assessing the applied value of the polygraph technique. More thorough and sophisticated research consistent with that approach would be both desirable and fruitful.

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POLYGRAPH USAGE AMONG MAJOR U.S. CORPORATIONS

By

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During the past decade many business people, union leaders, legislators and civil libertarians have expressed concern over private industry's increasing use of the polygraph (or lie detector) for preemployment screening as well as for other personnel-related purposes. It is estimated that anywhere from 200,000 to half a million such tests are administered yearly in the private sector, and observers generally conclude that the number of tests given and the number of firms giving them are increasing rapidly.

The polygraph has become a particularly attractive method of personnel selection largely becuase of its low operating cost-typically running from \$25 to \$50 per test-and the speed with which results can be obtained when compared with more conventional methods of background investigation. Opponents of the polygraph, however, stress that the technique may be an invasion of individuals' privacy and that the results of the tests are not as valid or reliable as most polygraph operators claim.

Over the course of its 50-plus years of existence, the polygraph has become the object of an intensifying controversy. As concerns its use in the personnel field and in employment practices, there appear to be two general schools of thought. On the one hand, there are those who contend that with internal business losses due to pilferage, theft and embezzlement estimated at some six billion dollars annually, employers are entitled to all the information they can gather on prospective employees, and that they should be allowed to do so by the most expeditious means available. In seeking to secure or continue employment, they argue, the applicant or employee is in fact seeking the employer's faith and trust. In return for this trust, the applicant or employee should be willing to waive some small portion of his or her "right to privacy" by submitting to a polygraph exam when asked to do so. Members of this school of thought seem to think that both the employers and the employees benefit through this admitted trade-off.

Many employers who favor the polygraph also feel that applicants or employees who refuse to submit to the tests have something to hide and are therefore not worthy of the trust they seek in employment.

The polygraph's opponents, however, contend that such testing is too great an imposition on employees' individual rights and dignity and that the traditional methods of personnel selection are more than adequate to accomplish

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the task of selection. Many of these people also question the validity of the tests as well as the legal and ethical implications of their use.

It should also be noted that the controversy is not confined solely to the business sector. The American Civil Liberties Union (ACLU) has taken an active stance against the use of polygraph tests in employment settings, as has the AFL-CIO. Former Senator Sam Ervin (D-N.C.) introduced a number of bills while in Congress that would have prohibited any such practices by industry, but all failed to become law. Senator Birch Bayh (D-Ind.) and Rep. Edward Koch (D-N.Y.) both introduced similar legislation to the 94th Congress. Most recently, the Federal Privacy Protection Study Commission recommended that the use of poly-graphs by private businesses be curtailed.

Leading the battle against any proposed ban of the polygraph is the industry's professional organization, the American Polygraph Association (APA). While simultaneously seeking to upgrade the professionalism of its some 1,500 members and working for the passage of licensing legislation for polygraph examiners by state and municipal governments, the APA has pledged to fight any measure which would deny organizations or individuals the right of access to polygraph examinations. Moreover, the APA has gained considerable support from lawyers, law enforcement officials and academicians in pursuing its goals.

Many state governments have already enacted their own laws designed to regulate or control the use of polygraph examinations in the area of employment. Nineteen states² and the Department of Defense have established formal laws or standards prescribing licensing and training requirements for polygraph examiners. In addition, 15 other states³ have effected legislation which in one way or another limits or restricts the use of the polygraph in employment practices. While there are many variations among these respective prohibiting statutes, they may be generally categorized in one of two basic formats: those that forbid employers' requiring employees to undergo polygraph exams, and those that prohibit employers from even requesting such a procedure. Tim of the states fall under the former category and the remaining five under the latter. Furthermore, several of the states leave open the possibility of voluntary submission on an employee's part. Thus, while the battle lines seem to have been rather clearly defined, the dispute is far from resolved.

Frequently, as a controversial issue gains the attention of the general public and the media, conflicting reports, statistics and conclusions emerge. The issue of business and the lie detector is no exception. Although the APA claims that one-fourth of all major corporations now use the polygraph,⁴ a recent study of background verification techniques found that less than 2% of the respondents used it regularly.⁵ Similarly, while the polygraph is thought to be used primarily in preemployment screening, many firms also use the technique to periodically assess employee honesty and company loyalty and as an investigative tool in regards to specific thefts and other alleged irregularities.

A Survey of Polygraph Usage

Given the emotional nature of the controversy, the conflicting reports of polygraph usage, the variety of legislation found at the state level, the possibility of new federal legislation which might ban the polygraph from industrial applications, and the lack of any recent studies aimed at establishing the actual frequency of polygraph usage in the private sector, it was apparent that an empirical investigation of the issue would be most helpful. A survey was designed and undertaken to measure:

- 1) the proportion of major firms now using the polygraph as a part of their personnel programs;
- 2) the manner and purposes of the tests administered by (or for) these firms; and
- 3) the firms' rationale for using (or not using) such methods.

The method of survey was a questionnaire which was mailed to the corporate personnel directors of major U.S. corporations nationwide. The questionnaire was divided into two sets of questions: one to be completed by those firms which were utilizing polygraph tests, and the other by those firms which were not. The first set investigated the following:

- 1) how long the firm had been using the polygraph;
- 2) the most frequent types (purposes) of tests administered and the proportion of employees to whom they were given;
- 3) whether the tests were required, requested or voluntary; and
- 4) a ranking of five characteristics of polygraph testing which are generally considered the method's greatest benefits or faults (depending on one's particular point of view).

The second set of questions covered different territory:

- * Whether the firm had ever used the tests;
- * a brief explanation of why the polygraph was not used;
- * an estimate of use by other firms in the respondent's industry;
- * whether the firm would consider using such tests and under what circumstances;
- * and a ranking of the same five characteristics included in the first set.

The Sample

Since the study was directed toward major corporations, the same of 400 firms was drawn from <u>Fortune's</u> lists of largest companies. There is general agreement that certain industries (e.g., transportation, retail and finance companies) are more prone to polygraph testing than others, such as durable goods manufacturers. To compensate for this tendency, the sample was composed

as follows: the 50 largest retailers, the 50 largest life insurers, the 50 largest transportations; the 50 largest commercial banks, the 50 largest diversified financials and 150 of the 500 largest industrials. The number of industrials was greater because the Fortune index includes such a wide variety of concerns, ranging from lumber to steel to food processing. To avoid overweighting the sample toward the largest corporations, the 150 firms in the industrial category included those ranked 1-50, 101-151, and 201-250, rather than just the top 150. By thus delineating the various industries to be surveyed, the authors felt that both those firms which were considered major in absolute terms, as well as those corporations which were deemed major within their own industry, could be queried. Similarly, this particular industry mix was believed to be representative of those firms more inclined to use polygraph testing as well as those which were less likely to.

No attempt was made to segregate the sample along geographic lines in consideration of the various state regulations regarding polygraph testing for employment purposes. Each questionnaire was coded prior to mailing, however, as to whether the particular firm was located in a state which had no regulations or restrictions, in one which prescribed licensing and training requirements, or in a state which had statutory prohibitions of usage, however limited. In this respect, the sample was composed as follows: 39.8% of the firms were located in states which had no regulations or restrictions; 23.7% were in states which prescribed licensing and training requirements; and 36.5% were in states which had statutory prohibitions of usage.

Survey Results: Use of Polygraph Testing

Of the 400 major U.S. corporations surveyed, usable responses were received from a total of 143, or 35.7 percent. In response to the key question, "As a part of your firm's personnel program, are you currently utilizing polygraph examinations?" 29 of the corporate personnel directors (20.3%) replied yes and 114 (79.7%) replied no. The response to this key question immediately indicates that the APA's contention that "one-fourth of all major corporations now use the polygraph" would seem reasonably supported. Further analysis of these data by type of industry suggests that usage is most common among commercial banks and retail companies (see Figure 1); 50% of them replied in the affirmative. These two industries were followed in order by transporation with 25% affirmative response, industrials with 12%, and life insurance companies with 4%. None of the diversified-financial firms reported using the polygraph in their employment and personnel programs.

As a means of investigating the growth rate of polygraph testing in employment settings, those firms which had responded positively to the key question were asked to indicate the length of time that they have used the polygraph examination in this respect. Thirteen firms (48.1%) indicated that they have used polygraph tests for five to ten years, another seven respondents (25.9%) for ten to fifteen years, and four firms (14.8%) for over fifteen years. Only three of the firms responding to the question (11.1%) indicated that they have used the polygraph for less than five years, and the mean for all respondents was approximately ten years of continued usage. Investigating this aspect further, the respondents reporting that they do not use the polygraph were asked to say whether they had previously used it and since discontinued usage, or have never used it at all. A substantial majority of 90 respondents (93.8%) indicated that they have never used the polygraph, while only six firms (6.2%) said that they have discontinued usage. It would seem, then, that those major corporations which do use the polygraph have been doing so for an extended period of time, with only a few firms turning to the practice recently, and fewer still discontinuing it. These data, at least, belie the notion that polygraph usage is increasing rapidly, at least among the major firms.

Purposes for Polygraph Training

Since a prime objective of the study was the determination of just what purposes the polygraph test serves in industry, the next question addressed to the firms using it was, "In general, what are your most frequent uses of polygraph test results?" The question was followed by three purposes which are acknowledged by the APA to be among the most common:⁶

- 1) verification of employment applications;
- 2) periodic surveys to assess employee honesty, loyalty and compliance with company policy; and
- 3) investigation of specific instances of theft or other alleged irregularities.

For each applicable purpose, the respondents were also asked to indicate whether such tests were administered to all applicants/employees or only a sampling of them.

In the case of employment application verification, ten firms which reported using the polygraph (34.5%) declared that they use it for this purpose, but of these, only three firms (10.3%) administer the tests to all applicants. Further, all three of these firms were retail companies. An indentical proportion of respondents reported using the polygraph in periodic surveys of employee honesty, and again, only three of the respondents indicated administering the tests to all employees. In this case, two of the three were retail firms and the third a commercial bank. Overall, only firms in four of the six industries surveyed (transportations, retails, commercial banks and industrials) reported using the polygraph for either of these two purposes.

In the case of the third common purpose, however, that of investigation of specific thefts or other irregularities, 26 (89.6%) indicated using the polygraph, but yet again, only a small portion of them (15.4%) administer the tests to all employees. Taking the affirmative respondents as a whole, only three firms (10.3%) said they use the polygraph solely to verify employment applications or to periodically check employee honesty; ten firms (34.5%) use it only in specific instances of theft or other irregularities; and 16 firms (55.1%) use polygraph tests in specific instances as well as for one or more of the other purposes. Clearly, while the specific instances test is by far the most common in use, a majority of firms still use the polygraph for more than one personnel-related purpose. The tests, however, are generally administered only to a sampling of applicants or employees.

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Effect of State Licensing and Training of Operators

In light of the APA's drive to effect state licensing legislation and in an attempt to measure any effects of such legislation, the corporate personnel directors were asked whether the polygraph tests administered by their firms are required, requested or voluntary in terms of applicants' or employees' securing or continuing employment. These data were then cross-tabulated with the respondent's location so far as degree of state legislation is concerned. Subsequent analysis suggests a tendency for employers in states which have licensing and training requirements established by law to require the tests more and request them less than do employers located in states which have no statutory regulations or controls. In the former case, 38.5% of the firms responding to the survey require their employees to submit to polygraph examinations and 23.1% of the firms request submission. In states which have no regulations, only 25% of the firms require the tests be taken, while 37.5% request them. In both cases, voluntary tests are permitted by the remaining firms. Further analysis of the three industries which appear to use the polygraph most frequently (retailers, commercial banks, and transportation companies) reveals that a significantly greater proportion of firms located in states which have licensing statutes use the polygraph than do firms which are located in states without such controls. (Figure 2) It thus appears that the existence of state regulatory statutes may be an important factor in firms' consideration of polygraph examinations as a viable personnel selection technique, and such legislative stipulations have probably also done much to increase firms' awareness of the

degree of professionalism and expertise attained by polygraph examiners.

Reasons for Use/Nonuse

The final question directed to firms which do utilize polygraph testing in their personnel programs consisted of a scaled ranking of five characteristics that might justify use of the polygraph: cost, as compared with other selection methods; speed of obtaining results; availability of trained operators; validity and reliability of the tests; and moral or ethical implications of the polygraph as used in industry. This same question was also put to the personnel directors of the firms which reported not using the polygraph. In the later case, however, the question was reworded slightly, requesting the respondents to rank the characteristics in order of their importance as reasons for not using the procedure. Analysis of the response to these questions reveals that two items-speed and moral or ethical implications-are ranked exactly opposite by the personnel directors in the two groups. (Figure 3) Those whose firms are using the polygraph rate speed as the most important factor and offer the least consideration to moral or ethical implications. Conversely,



personnel directors whose firms are not using the polygraph rate moral or ethical implications as the most objectionable characteristic of the method. but do not consider the speed of obtaining results to be of any major significance. It is interesting to note that a rather substantial disparity exists in the ratings given to the issue of moral implications by the respondents who reported using the polygraph. While nearly one-half (47.8%) of them rated the item as being of least importance, another 21.7% of the respondents in this group rated the issues as either first or second in importance. This divergence of opinion is perhaps explained by what the propolygraph forces refer to as "the right of the innocent to prove their innocence."6 They note quite emphatically that the polygraph works both ways; that is, not only does it identify the guilty, but it also absolves the innocent, a characteristic which many seem to consider a prime benefit. It would appear from the survey results that a number of personnel directors of major U.S. corporations which are currently using the polygraph also subscribe to this notion and regard it rather highly.

Figure 3

Major Characteristics of the Polygraph Method Ranked According to their Relative Importance as...

	Benefits of Using* the Method.			Objections to Using** the Method		
CHARACTERISTIC	RANK	MEAN	STD. DEV.	RANK	MEAN	STD.DEV.
Speed of Obtaining Results	(1)	1.760	.831	(5)	4.163	.717
Cost, as Compared to Other Methods	(3)	3.391	1.406	(3)	3.264	1.195
Availability of Qualified Operators	(4)	3.636	.902	(4)	3.415	1.134
Validity and Reliability of the Tests	(2)	2.125	1.154	(2)	2 .167	.994
Moral or Ethical Considerations	(5)	3.739	1.484	(1)	1.408	.982

* Ranked by Personnel Directors whose Firms do use the Polygraph.

** Ranked by Personnel Directors whose Firms do not use the Polygraph.

In the case of the three remaining ranked items, both groups of respondents ranked each item identically.

Those questions to firms which don't use polygraph methods were primarily designed to investigate why the technique is not being used. Use such question asked respondents to briefly explain why they had rejected the idea of polygraph testing. While the question was open ended, almost all of the responses could be categorized into one of three groups: 1) the tests were considered unnecessary and inappropriate in the business setting by 51 (79.7%) of the respondents; 2) legal implications of polygraph usage were the primary cause of reluctance on the part of ten personnel directors (15.6%); and 3) cost was the paramount objection in the case of three respondents, or 4.7%.

Asked what procedures were used in lieu of polygraph testing for personnel selection, the overwhelming response was the personal interview and the traditional reference check, as indicated by 49 firms (79.0%). Less than 5% of the firms indicated a reliance on psychological testing, and the remaining respondents offered a myriad of alternatives ranging from checks of credit files and police files to fingerprinting and "...a very perceptive personnel manager."

Another guestion put to the personnel directors not currently using the polygraph was, "Are there any conditions under which you would consider using polygraph testing?" Again, the open-ended responses could be grouped among three general replies. Fifty-five respondents (62.5%) replied with a definite no or none. Seventeen others (19.3%), however, reported that they would only consider such tests as a "last resort," while 16 of the respondents (18.2%) noted that they would consider using the polygraph under certain conditions. An examination of these data based on firms' type of business reveals some rather diverse opinions among the respondents. For instance, while one-half of the commercial banks responding to the questionnaire reported using the polygraph, 85.7% of those banks which do not use it said that they would not consider doing so under any circumstances. On the other hand, although only 12% of the industrials reported using the polygraph, almost one-half (47.1%) of those who do not said that they would consider it under certain conditions. Further, while none of the diversified financial firms responding to the survey used the polygraph, one-third of these firms indicated that they would be receptive to the idea in certain cases. Less than a quarter of the personnel directors of firms engaged in transportation or life insurance said that they would consider the polygraph as a viable alternative, but 71.4% of the retail firms not now using the method replied that they would consider such use. Among other things, the data suggest that a rather extensive pool of potential polygraph users exists in some areas of business which have not been thought likely to utilize such services.

The final item which personnel directors not using the polygraph were asked to complete was an estimate of the proportion of firms within their own industry they thought might be using the polygraph in personnel-related areas. The question was prompted to a large degree by the observation that "companies that use the polygraph to screen employees tend to be reticent about it,"4 and the data collected seem to support the observation. Asked to indicate whether they thought most firms, more than half, less than half, or only very few firms in their respective industries were presently using the polygraph in the personnel area, none of the respondents replied with either of the first two choices. Only three of the personnel directors (3.4%) opted for less than half, and 85 (96.6%) of the respondents believed only a very few firms in their industry were actually using the polygraph. Among the three business categories indicating high use of the polygraph (transportations, retailers and commercial banks), the perceptions of personnel directors whose firms are not using the technique are markedly different from the actual usage frequency found by the study. As an example, the view was unanimous among commercial banking personnel

directors that only a very few of their peers use the polygraph, but the data collected during the survey reveals that 50% of commercial banks do in fact use it. Similarly, respondents in the retail trade were 83% in agreement that only a very few retailers use the method, while 50% of the retail respondents noted that they do use the polygraph. Among the personnel directors of transportation companies, 88.9% replied that they thought only a very few firms in their industry were using the polygraph, whereas the actual usage rate was found to be 25%.

Summary

Upon examination and analysis of all the data collected during the study, several factors emerge from the survey as characteristic of the use of the polygraph by private business today. Most notable of these must surely be the implication that one-fifth of major corporations are presently using the polygraph in personnel-related areas; a fact that seems substantially amplified when one considers that the firms surveyed represent the largest and most influential corporations in the country. Of course, this finding may be viewed in the opposite respect as well, and many may find somewhat greater satisfaction in the impression that four-fifths of the major firms are not using the polygraph.

So far as the practice in general is concerned, the study also revealed the following patterns of polygraph usage:

** While it may be said that polygraph tests are most frequently administered as a means of investigating specific instances of theft or other irregularities, it is important to note that a majority of firms which utilize the technique use it for more than one of the three most common purposes. Thus, if a firm has no objections to using the polygraph for security purposes, it will probably have no objections to extending the practice to the employment function.

** Polygraph examinations are generally given only to a sampling of applicants or employees, although some industries (e.g., retail firms and commercial banks) appear more prone to administering the tests to all job applicants or employees than do others.

** According to the survey results, corporate personnel directors whose firms engage in polygraph testing feel that the major incentives for using the technique are: the speed with which results may be obtained, the validity and reliability of the testing procedure, and the low cost of such tests. Personnel directors whose firms do not use the method, however, indicated that they abstain for much the same reasons, citing moral or ethical implications, validity and reliability, and cost as their main objections, coupled with the notion that the use of the polygraph in the business setting is both unnecessary and inappropriate.

** Most corporations which are now using the polygraph as a part of their personnel programs have been doing so for at least five years, and in contrast to earlier reports, usage among major firms does not seem to be increasing rapidly. Rather, there are indications of a small but sustained growth rate among large corporations. Although the absolute magnitude of this growth in usage may seem slight, it should not be construed as indicative of limited polygraph testing in the future. While 60% of the respondents not now using the polygraph reported that they would in no way consider the practice, the other firms indicated that they would consider the method under certain circumstances.

** Among all firms surveyed, there is a substantially greater proportion of firms using the polygraph in states which legally prescribe licensing and training requirements for polygraph examiners than there is in states which do not regulate the practice in any way. Furthermore, there is a greater tendency for firms in regulated states to require (as opposed to request) the tests as a condition of employment or continued employment than exists in states where such regulation has not been effected. On the other hand, it would appear that state licensing legislation has had the net effect of generating a greater confidence in polygraph examiners and establishing a higher degree of credibility for the profession as a whole.

While the study was not intended to offer any direct resolution of the polygraph controversy, it does present a clear empirical picture of the frequency and purposes of polygraph testing among major U.S. corporations today. Perhaps this information will be used to supplant the estimates, conjecture and suppositions which now surround the issue, and to form the basis for objective debate and legislative action in the future.

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AN ASPECT OF WORLD WAR II USE OF THE POLYGRAPH

Bv

John G. Linehan

Approximately 12% of captured enemy prisoners of World War II were Germans interned in the United States under the wardenship of the U.S. Army Provost Marshall. Understandably, the National Socialist (Nazi) political climate in which the prisoners of war (POWs) were nurtured prior to their capture resulted in many being hardcore Hitlerites and others being sympathetic to the cause of communism. Becuase of the fear and distrust between the prisoners themselves and the fear of the U.S. authorities of the consequences of repatriating these antidemocratic politically oriented prisoners to their post-war Germany at the conclusions of hostilities, it was decided in 1944 by President Roosevelt and his War Department to establish the Prisoner of War Special Projects Division as a branch of the Provost Marshal General Office. The primary purpose of this branch was to reeducate and indoctrinate the internees to our traditional democratic beliefs and ideals of government. Too, it was realized that if and when the Allied Forces occupied Germany the assistance and cooperation of trustworthy German nationals would facilitate the stabilization of that nation.

Accordingly, special schools were set up in the continental U.S. to train selected POW's for police and administrative tasks in military government when repatriated. The police school was established on June 2, 1945 at Fort Wetherill. Rhode Island on Narragansett Bay. A total of 17,883 POWs were screened for selection and of these 3,711 were picked; with the majority, 2,895, scheduled for training at Fort Wetherill in police work. The screening procedures included written and oral tests for ascertaining intelligence, honesty, political beliefs, and job aptitude. The interviewers selected what they considered to be reliable repatriates to assist our contemplated occupational forces. An administrative decision was then made to utilize the polygraph tests for deception to detect any undesirable and untrustworthy subject who may have slipped through the screening process for this important project. Arrangements were made for Leonarde Keeler to gather a team of experienced and skilled polygraph examiners for testing the police candidates at Fort Wetherill. For this team Mr. Keeler invited W. J. Austin, then Assistant General Counsel of the State of North Dakota; David Cowles, Director of the Cleveland, Ohio Police Department Crime Laboratory: Alex Gregory, formerly of the Detroit Police Department: Charles Wilson, then Director of the Chicago Police Department Scientific Crime Detection Laboratory; Russell Chatham, formerly of the Indianapolis, Indiana Police Department; and Paul Trovillo, formerly of the Chicago Police Department Scientific Crime Detection Laboratory.

More then a decade later Russell Khatham and Paul Trovillo collaborated on an unpublished manuscript which included a description of their experience in administering the polygraph examinations to the POW police school candidates. Their own words, excerpted from the manuscript, are set forth:

... Lieutenant Colonel Ralph Pierce served as a director of the project. The purpose of the examinations was two-fold: to determine if the Lie Detector was

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a useful tool for the purpose, and to coorelate our findings with those of interviewing teams which had selected certain individuals as trustworthy aids for our occupation program.

This polygraph team examined two hundred and seventy-four German Prisoners of War between August 10th and August 18th, 1945. The site for the examinations was a barracks building at Fort Wetherill, near Jamestown, Rhode Island. Trusted German prisoners of war served as the first interpreters in this project, and, later, interpreters from the regular Army were brought in for the purpose.

Each prisoner was examined in a private room, and data sheets were filled out on the lower floor of the barracks building by special assistants. Each examiner employed in the private interrogation room a Keeler Polygraph which recorded relative blood pressure changes and pulse variations. together with respiratory changes and electrodermal responses. Before the actual tests began each day, groups of the prisoners were called together and were read the following instructions: "Because of the necessity of rebuilding and reorganizing your country in the best and quickest manner, we have deemed it important that the most reliable Germans assist. With this in mind, you have been chosen as reliable, friendly individuals to assist us and your people. However, in our past experience we have found some Germans, thought to be reliable, were in reality planning to interfere with our reconstruction program. For your own protection they had to be eliminated, for if one unreliable man among you goes to German/ as a trusted friend our program and yours may be set back a long time, and you and your homeland friends may be seriously injured. For this reason, we are to subject you to a lie detector test to be sure your voiced intentions are genuine. If they are genuine, we welcome you in this training program; if they are not, you should be eliminated from this program as a protective measure to your comrades and you.

If you are sincere you will answer all of our questions truthfully - the machine will show us positively whether or not you tell the truth. This instrument has been used successfully for many years in this country both in examining criminal suspects and in selecting personnel for trusted positions. It has been found to be extremely reliable. We will use it here to examine you as an applicant for a trusted position - not as a criminal. We need your complete cooperation. Regardless of your feelings, it is much more important to answer all questions truthfully, even though you tell us certain things you would like to withhold, than to lie. We are testing you for reliability and honesty and are not particularly concerned regarding your past." The question series employed was standardized for the use on all subjects by every examiner, and included the following questions:

Were you ever a member of the Nazi Party? Do you believe in Nazi principles now? Would you commit any acts to sabotage any allied peace plans? Do you advocate Communism for Germany? Do you plan on joining any anti-Allied underground upon returning home?

Were you ever a member of the Gestapo?

Do you believe in religious freedom?

Have you been a member of the S.S.?

Have you been a member of the S.A.?

Do you intend to cooperate fully with American Forces?

Have you committed a crime?

Do you know any Nazis among your comrades here?

Are you faking your attitude in order to make it easier for you to be sent back to Germany?

Have you been truthful in all answers to American Officers?

It was found that special arrangements were desirable between the examiner and his interpreter. Use of the arrangements consisted of the use by each examiner of a printed sheet on which was written, in German, explanation of the function of each of the attachments of the polygraph. This was read aloud in German by the interpreter as he attached the instrument to the prisoner's body or as the examiner did so. Another arrangement which proved necessary was agreement on four instructions to the subject which could be spoken in German during the test. The examiner, whenever he thought that the instruction was necessary, indicated which of the following four statements were to be made by the interpreter to the prisoner: 1. Don't move your hand. 2. Don't move your feet. 3. Sit quietly. 4. Don't talk - just say yes or no. The face sheet prepared by Mr. Keeler for recording personal data of each prisoner included the following information: Name, home address, rank and branch, where imprisoned in the United States, duration of imprisonment, marital status, age, dependents, nationality, occupation within and outside of prison, education, theater of operation, date captured. There was also on the face sheet a place where examiners could show the number of each question to which subjects gave answers indicating deception. Following the test, each operation reported to Mr. Keeler the results of the examination, and Mr. Keeler then made the final reviews.

When the program was over we found that we have obtained the following overall results: We had recommended that 156 German prisoners of war (5%) be considered trustworthy to be sent back to Germany to assist in the policing of the country; we had not recommended 110 German prisoners (40%); and we had reported indefinitely 8 prisoners (3%).

During the course of the examination program, those in charge of the screening of prisoners determined to make a special test of the ability of the polygraphic technique to make accurate determinations of guilty knowledge. They sent in for examination fourteen so-called special subjects, who were confidants of the Army G-2 section and were not regular prisoners who had been considered for policing Germany. When we were able to pick out 11 of these 14 men, without

any hint being made to any of the examiners that a special test of the polygraphic technique was being made by those in charge of the screening program, there was general agreement that the technique was satisfactory! At the conclusion of the tests of the 274 prisoners, the Army decided to discontinue the entire training program. The reasons were not given us!

Case Illustrations of Data From Prisoners Tested

In order to give a more concrete picture of the type of information furnished by the Keeler Polygraph Examiners to the Office of the Provost Marshal General, we review below recollections of some of the data, which is fairly typical of those prisoners who were not recommended for employment as police assistants.

Subject 1 stated that he was a member of the Nazi Party. He gave specific reactions to being in sympathy with the Nazi Party and as to whether he would commit sabotage if he were sent back to Germany. Subject 2 stated that he was member of a Nazi student organization. He informed the examiner that he knew ten members of the group being considered for sending back to Germany whom he knew to be Nazis, and in fact he said some had been wearing Nazi insignia privately about the camp! His polygrams showed him as having Communist sympathies. He also reacted to questions involving his willingness to cooperate with American forces. and as to his faking of attitudes regarding desire to participate in the project. Subject 3 stated that he had been treated for a heart disorder and a neurosis many years before and because of this ailment he was transferred from the SS to the Hitler Youth movement. He had been a member, he said, of a group where he was a Block Leader. He was a member of the Nazi Party when he was captured and also a member of the SS. His polygrams showed him to be having Nazi sympathies at the time of the test. Subject 4 told the examiner that he believed in many of the Nazi principles at the time of the test. He said that he would not obey the laws of our occupational forces if they were against his own personal or his comrades' advantage. His polygrams indicated that he was not willing to cooperate with the American forces, that he had Nazi sympathies at the time of the test, and that he had lied to American Officers.

Subject 5 stated that he had joined the Nazi Party nine years before. His polygrams indicated trat he had been untruthful when he said that he was not sympathetic to Communism, when he said that he would not sabotage American peace plans, and when he said that he was not faking his attitude in order to return to Germany. Subject 6 told the examiner that he was in the NSKK and in the SS. His polygrams indicated that he had been in the Nazi Party and that he was presently sympathetic to the Nazi policies. He indicated that he did not wish to be a police officer in our occupation forces and his polygrams supported this by reactions noted in questions about cooperation with our forces. The interpreter employed in this case happened to have known the subject when he was in Germany and said that this subject and his family were very strong Nazi sympathizers. Subject 7 was named by more than one other German prisoner of war as the man who had supplied \$150.00 and also a fake identification badge for a prisoner planning to escape from the camp the prisoners had occupied just before coming to Fort Wetherill. This subject denied the allegations made by the other prisoners, although his polygrams indicated that he had committed a crime. Subject number 8 admitted that he was a member of the Nazi Party and also of the SA at the time of his capture by our troops. His polygrams indicated that he still believed in Nazi principles and that he had been an ardent Nazi. Subject 9 professed no party affiliations, indicating that he had been a field man for a sporting concern traveling out of Germany and not able to avoid Nazi pressure. He claimed that his employer had kept up his salary all through the war. However, he insisted that he had no desire to become a policeman and that he had no intention of full cooperation with the American Forces if they returned him to Germany. The polygrams of this subject showed that he desired to join some anti-allied underground, that he was cooperating fully, and that he intended to sabotage allied peace plans to the best of his ability.

Subject 10 gave indication in his polygram of being untrustworthy and of being an opportunist, of having communist sympathies, as well as faking his attitude in order to return more readily to Germany. The POW interpreter, who questioned him at some length following the test, was of the definite opinion that this man was untrustworthy and uncooperative. Subject 11 stated that he was a member of the Nazi Party in 1933 and its Treasurer until 1938! He was a member of other Nazi organizations and admitted that he had long been in sympathy with Nazi principles. His polygrams indicated support for this statement and indicated further thathe desired to commit acts of sabotage. He appeared to be a very unstable individual. Subject 12 had also joined the Nazi party in 1933, but he was not a German soldier at the time of his capture, for he was serving as a German policeman and was guarding bridges and roads in France at the time the German forces collapsed. The subject had been reported by other members of the group as a believer of Nazi principles now, and his polygrams showed definite reactions to his having been associated with the German Gestapo, to his having Nazi sympathies and to his lack of intention to cooperate with the American Forces.

Subject 13 also reacted specifically to being a member of the Gestapo, and to having Nazi sympathies at the time of the test, and to a desire not to cooperate with the American Forces. Subject 14 professed that he had no political affiliations, although he, too, reacted in the polygrams to having definite Nazi tendencies and to faking an attitude in order to return more readily to Germany. Subject 15 told the examiner that he had been a member of the Nazi party in 1942. His polygrams indicated marked nervous tension and reactions indicating that he was faking his attitude of cooperation and that also he was now advocating communism for Germany. Subject 16 stated that he had joined the Nazi party many years before when it had its beginning in Germany. He stated also that he had information that one of the other prisoners of war, whom we had learned had obtained \$150.00 and helped to fake a badge for a prisoner, had helped other German prisoners of War to escape. He provided specific information regarding the other German prisoner and his untrustworthiness. This subject reacted, in his polygrams, to joining an anti-allied underground, to having been a Block Leader, to knowing Nazis among the group of examinees, and to not cooperating fully with the occupation forces.

Subject 17 admitted that he had been a member of a Nazi organization since 1932 and that he had served nine months in prison in Germany for raping a six-year-old girl. He also said that since he had been in the service he had been in the guard house for breaking the rules. The subject said that he had a daughter six years of age by a woman to whom he was not married. The polygrams indicated that he had Nazi sympathies at the time of the test. Subject 18 told the examiner that previous to 1933 he was in a communist party organization and that he and his brother distributed anti-Nazi pamphlets in 1933 and that he had been sentenced to prison in a Nazi camp. He stated that his brother had been hanged by the Nazis for high treason. His brother-in-law was sent to a concentration camp for gathering arms for revolt. This man went on to say that he had been beaten by the Nazis and still had an injury on his head inflicted by members of the Gestapo. This subject disclaimed any communist sympathies and his polygrams supported that position.

Subject 19 said that he had applied for membership in the Nazi party in 1934 and was a member of the SA organization, finally becoming a full member of the Nazi party. Polygrams of this subject indicated that he was not intending to cooperate with the occupation forces. The man had been mentioned by others as having Nazi tendencies.

Subject 20 professed no party affiliations. Following the first test, in which he showed that he may have been a Block Leader, he said that a Block Leader had lived in his father's house for several years. He went on to say that in 1937 he was brought to court by a girl who said that he was the father of her child. This subject also complained of having had alimony trouble. In 1937, also while he was in the Army, he was sentenced to three days in the guardhouse for wearing civilian clothes and to three days for urinating on a sergeant's leg, while intoxicated! He stated that he had deserted the German Army in order to be captured.

Subject 21 at first denied that he had been a member of the Nazi party and then admitted his membership as well as his having been a Block Leader for many years. Polygrams of this subject revealed that he intended to sab otage American activities in Germany and to fail in cooperation with occupation forces. They also indicated that he was an ardent Nazi at the time of the test.

Subject 22 stated that he had witnessed war crimes by the Rumanians against the Jews and he claimed that he and other soldiers had attempted to restrain the Rumanians and that he had been put in jail by German officers for doing this. Polygrams of the subject, however, indicated that he was a believer at the time in Nazi principles, that he had every intention of committing acts of sabotage against the allied peace plans, that he intended to join anti-allied underground activities on returning home, that he did not intend to cooperate with Americans, that he had committed a crime at some time, that he knew Nazis now among his comrades in the camp, and that he was faking his attitude of interest in order to expedite return to Germany.

Subject 23 at first denied membership in the Nazi party but finally said that he had joined it in 1933 and that he was also a member of another Nazi organization. His polygrams gave marked reaction when he was questioned as to whether he planned to commit sabotage, as to his knowing Nazis in the camp as to his having Nazi sympathies now, as to his attempt to join anti-allied underground movement. The prisoner of war interpreter considered him to be an opportunist and exceedingly unreliable.

Epilogue

Subsequent evaluation by sociologists, psychologists and historians of

the entire Special Projects Division efforts to align the POWs political attitudes and ideals to conform with those of the Allied nations, excluding Russia, resulted in the feeling that despite failure in some areas, certain unrealized objectives, and the inability to channel the repatriated POWs to their governmental duties as initially proposed - that despite all this - the program overall had a degree of success and realized some of the objectives in that some of the POWs did make a valuable contribution to the Allies by their conduct and administrative roles in the civil affairs of occupied Germany.

References

Chatham, Russell and Trovillo, Paul, unpublished manuscript on The Administration of Polygraph Tests to German POWs, circa 1955.

Gansberg, Judith M. <u>Stalag</u>: <u>USA The Remarkable Story of German POWs</u> in America, Toronto: Fitzhenry & Whiteside, Ltd., 1977.

National Archives, Modern Military Branch, RG 389 (PMG), Prisoner of War Special Projects Division, Administrative Branch, Decimal File, 1943-1946, Boxes 1593-1655; and RG389 (PMG) Enemy Prisoner of War Information Bureau Reporting Branch, Subject File, 1942-1946, Boxes 2468-2714.

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NOTICE TO READERS

If you are planning to relocate your business or move your residence, please fill out the form below. Because we mail by bulk rate, all returned mail must be purchased by the American Polygraph Association from the Post Office at 3rd Class Rates plus 25ϕ for the address change. Your cooperation is appreciated.

NAME

Company Name (If a company subscription)				
Old Address	New Address			
Z.1.P	· Z1P			
Are you a member of the APA?	Yes No. If yes, the Secretary			
and Treasurer of the Association this form to:	will be notified. Please mail a copy of			
American Polygr	aph Association			
P. O. Box 1061 Severna Park, Ma	ary la nd 21146			

WHY NOT LET THE DEFENSE ATTORNEY MONITOR?

By

Theodore G. Welch

Facilities

Before allowing anyone to monitor polygraph examinations, the polygraphist must have the proper facilities in which the defense attorney can monitor without compromising the efficacy of the examination itself. The cigarette cough, the unintentional kick on the wall or loud talking have always been problems with the "one-way mirror". Since my examinations are often monitored by Prosecutors, Defense Attorneys and Law Enforcement Officers, it is of paramount importance that the polygraph suite be professional in both atmosphere as well as in technique; therefore, the facilities incorporate the following rooms:

Reception Room Monitoring Room Adjoining Conference Room Examination Room Polygraphist Office

The entire suite is shag-carpeted and has a combination of bittersweet and brown upholstered chairs, plus wooden tables. The monitoring room consists of a table and four chairs, audio speakers and control panel. All doors within the suite are solid core oak, and the walls have three inches of fiberglass insulation as well as two inches of soundboard beneath the walnut and early American paneling. Above the ceiling is six inches of fiberglass insulation. The "one-way mirror" consists of two separate pieces of ½ inch glass with three inches of air space within. Outside noise is minimal.

Preliminary Activities

From the moment the examinee enters the front door of the polygraph suite, he is accompanied by the defense attorney or other monitors. Prior to the time the examinee signs the Polygraph Statement of Consent, the defense attorney and prosecutor are able to review with the polygraphist that material which they feel is of importance to their case. Actually, most of the material is furnished to the polygraphist well in advance of the scheduled appointment date. When the "Consent Form" is read aloud to the examinee, who reads silently to himself, the defense attorney is present. The examinee then signs and initials the document and this is witnessed by the defense attorney, as well as all others who are monitoring the examination. The willingness of the examinee to be tested is of paramount importance during any polygraph examination. Even though he once agreed, the examinee still has the option to change his mind. That the examinee did voluntarily and without duress, coercion, unlawful inducement, or

The author is a member of APA and in private practice in Madison, Wisconsin. His practice is limited to criminal cases, and 45% are stipulated, in accordance with <u>State v. Stanislawski</u> 62 Wisc. 2d 730 (1974). promise of reward, consent to a polygraph examination is further attested to when witnessed by the defense attorney upon completion of signing the consent form. After the consent form has been duly signed and witnessed, all monitoring personnel are escorted into the monitoring room. From this point on, the entire examination is monitored by the defense attorney or prosecutor.

Since I have been conducting polygraph examinations I have not had an instance where the defense attorney, or anyone, interferred with the polygraph examination. To the contrary, most have been extremely helpful in that their client feels more comfortable knowing that his attorney is present at all times.

Anxiety

Polygraph psychology is an important factor in the proper administration of any polygraph examination. As is widely known, there are many psychological emotions an examinee may display.¹ The fact that the examinee knows his attorney is monitoring, greatly reduces emotional stress and anxiety. I feel that the emotion we record is the guilt on the part of the liar.²

Assistance from Defense Counsel

In many instances while well into the post-test interview (interrogation) the Defense Attorney has actually entered the examination room and assisted with the interview. Several confessions have been obtained with the participation and genuine assistance of the Defense Attorney. I would of course be negligent if I did not admit several instances of the Defense Attorney terminating the examination during the post-test interview. However, there have been very few of these occasions, and most examinations are completed in their entirety.

Conclusions

The first time I conducted an examination knowing that "everyone" was watching, made me somewhat nervous. Since that first examination however, I feel that the advantages of allowing the Defense Attorney to monitor polygraph examinations are beneficial in that:

The defense attorney knows how the examination is conducted and knows of the professional environment in which it is administered.

General anxiety is greatly reduced.

Chart interpretation is easier.

It is somewhat easier testifying in court when the entire examination was monitored by the attorneys. The explanation of the procedures utilized, statements made, and allied documents are easier to explain if the Defense Attorney was present and witnessed all proceedings.

The next time an examination is scheduled and the Defense Attorney wishes to monitor your examination, why not forget your prior bias, and maybe you will learn as I did, that you will derive many unforseen benefits.

References

¹F. L. Hunter, "Anger and the Polygraph Technique," <u>Polygraph</u> 3 (4) (December 1974).

²R. O. Arther, "Polygraph Psychology," <u>The Journal of Polygraph Science</u>, 10 (1)(July-August 1975).

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Robert F. Royal and Steven R. Schutt, <u>The Gentle Art of Interviewing and</u> <u>Interrogating: A Professional Manual</u> <u>and Guide</u>. Englewood Cliffs, N.J.; Prentice-Hall Inc. 244 pp.

A REVIEW

By

Clarence H. A. Romig

This book was not written for polygraphists, yet our readers should have the same goal. Both want to learn how to be more effective when interviewing or interrogating. And if the promotional material for the book does not exaggerate, in just three hours you can discover how to automatically get statements and answers when questioning witnesses and suspects. Powerful new techniques are promised.

The Gentle Art of Interviewing and Interrogation: A Manual and Guide was authored by Robert F. Royal and Steven R. Schutt. Mr. Royal served as an FBI Special Agent prior to entering the private security field. Mr. Schutt was a state crime laboratory chemist and a sometime lecturer for the Backster School of Lie Detection before becoming a security consultant. This combined background purportedly contributed to their recovery of more than \$14,000,000 worth of stolen property and confessions to more than \$25,000,000 worth of crime.

The authors describe their interview and interrogation technique as the result of years of research and testing. They call their process a "stimulus-response" technique, based on the idea that one must ask the right kinds of questions if the right response is to be expected. The book is a guide to the how, when and where of asking questions.

The Reviewer is an adjunct Associate Professor, Police Training Institute, University of Illinois, Urbana, Illinois 61801.

Polygraph 1978, 07(3)

References

¹F. L. Hunter, "Anger and the Polygraph Technique," <u>Polygraph</u> 3 (4) (December 1974).

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At the outset an interview is defined as a meeting between two or more persons to talk about a specific matter and, interrogation is defined as the art and mechanics of questioning for the purpose of exploring or resolving issues. Both interviews and interrogations are defined as logical systems of organism conditioning. Organism conditioning, in other words, includes persuasion, and repetition as used in salesmanship.

One basis for successful interviewing and interrogating is when the interviewer can perceive expressions, interpret their significance, and apply appropriate influences more effectively than the suspect, and then exercise control over the suspect's attitude and actions. The mechanics of questioning must be effective in order that the control over the suspect takes place. Therefore the characteristics of good questioning construction are listed as:

- a. Short questions confined to one topic.
- b. Clear and understandable questions.
- c. Avoiding harsh terms; using mild words.
- d. Using precise questions to get specific answers.
- e. Using questions that discriminate the relevant from the irrelevant.

The three principal procedures for applying questioning techniques are: (a) the free narrative, where the suspect is asked to relate what he knows about an occurrence; (b) the direct examination, to bring out a connected account of the event; and (c) the cross examination, for the purpose of testing previous testimony for correctness, resolving conflicting information, determining completeness, filling in evaded details, evaluating the judgment of witnesses, and undermining self-confidence created by deception.

Before questioning they tell us to review all available information, read other statements, visit the crime scene, and conduct a background investigation of the suspect. The applicable statutes concerning the crime should be reviewed and a list of unknowns or possible questions should be prepared. The suitability of the locale for the questioning should be evaluated for privacy, neutrality and security. The image of the interviewer should be one of personal eminence.

The most informative, but brief, section of the book concerns the psychological and physical influence of tobacco, alcohol, drugs, coffee and tea, fatigue, hunger and thirst, age, and sex. These factors influence both the interviewee and interviewer positively or negatively and are seldom well explained in other interrogation texts. Shortcomings of this section are brevity, the failure to delineate the ages of children suitable for questioning, the legal time limits for interrogations, and the underestimating of the number of colorblind (and night-blind) individuals in the general population.

Among the high points of this book are samples for basic statements, a pre-interview checklist, interview time logs, and a control sheet for a tape recorded interview.

As predicted by the authors, the material can be read in just three hours.
Whether or not the sought for statements and answers will be achieved may largely depend upon the interviewer's ability to assimilate and employ the detailed information provided. Perhaps other readers will discover the promised "new methods" and "powerful new techniques" which this reviewer was unable to identify. Further, this promised revelation of years of research and testing by the authors was flawed by their merely reporting experiences, without hypothesis, data, methodology, or replicable research. There is a vast difference between personal experience and research. The three sole references cited in this book dated from 1913 through 1969 and the fourteen legal citations were dated from 1850 through 1954. There was neither a bibliography nor suggested reading list.

The emphasis of this book is on interviews and interrogation and not the use of the polygraph. Yet the polygraph is cited favorably on three occasions as a truth-verifying instrument. Despite the deficiencies listed above, this book does have some value for polygraphists, if only as a review, or for the reassurance that really few new discoveries have been made recently in the area of interviews and interrogations.

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Hans Selye, M.D. <u>The Stress of Life</u> New York: McGraw-Hill, 1978 515 pp. \$4.95 paper

A REVIEW

Bу

Norman Ansley

This revised and expanded edition of a book first published in 1956 is meant for the lay reader. The earlier work was published in eleven languages, and over 100,000 copies were sold. The basic tenet is the explanation and amplification of the "general adaptation syndrome," often called the "stress syndrome." Stress, states Selye, exerts its effects on all living things, and in humans takes such forms as insomnia, heart attacks, ulcers, asthma, and arthritis. Because the book is meant for the lay reader, Doctor Selye has included suggestions on how to overcome harmful effects of stress, and how to use stress to advantage.

The book is a peculiar work, rambling at times, yet capable of concise explanation at others. Facts are interspersed with anecdotal information, theoretical and philosophical digressions, and even contrary opinions. The book has stories for those interested in the history of medicine and the problems of research.

The author has not cited references or authorities for his views although he often mentions names and dates which could lead to source material with some effort. There is a useful glossary, a limited annotated bibliography, and an index.

<u>A B S T R A C T S</u>

Voice Stress (PSE) and GSR Compared

Horvath, Frank. "An Experimental Comparison of the Psychological Stress Evaluator and the Galvanic Skin Response in Detection of Deception." <u>Journal</u> of <u>Applied Psychology</u> (1978): 338-344.

The Psychological Stress Evaluator (PSE), which is asserted to be a voicemediated lie detector, and the galvanic skin response (GSR), recorded with a standard field polygraph instrument, were used to detect nonrisk lies about numbered cards concealed by a sample of female (n=30) and male (n=30) college students. Evaluation of response data was subjectively carried out by two trained evaluators; their interrater agreement was .38 for PSE analysis and .92 for GSR evaluation. The hit rates obtained in PSE analysis were at chance levels and were not significantly affected by the sex of the subjects, simultaneous use of both PSE (Tape recording) and polygraph apparatus, repeated trials of testing, or evaluator differences. Evaluation based on GSR analysis generally exceeded chance levels; however, hit rates were significantly (p < .05) higher in a first trial of testing than in a second trial. These findings were consistent with previous research and do not indicate that the PSE is effective in detecting deception. (Author abstract.)

Physiological Measures

Podlesny, John A., and Raskin, David C. "Physiological Measures and the Detection of Deception," Psychological Bulletin 84 (4)(1977): 782-799.

Laboratory research on physiological measures for detection of deception is reviewed and evaluated. The general problems encountered in making inferences about truth and deception from physiological recordings are described, and various methods for designing tests of deception are explained and evaluated in light of these problems. The review concludes that a number of cardiovascular, electrodermal, and respiratory measures have been shown to be effective in discriminating between truth and deception. Other promising measures are identified, along with suggestions for conducting laboratory research that will be maximally generalizable to field applications of detection of deception. (Author abstract.)

Electrodermal Orienting Reflex

Goldwater, B.C. and Lewis, J. "Effects of Arousal on Habituation of the Electrodermal Orienting Reflex," Psychophysiology 15 (3)(May 1978): 221-225.

The effect of level of arousal upon rate of habituation of the electrodermal orienting reflex (OR) was studied by having 20 tone stimuli presented while subjects were either standing or seated. The standing condition was characterized by both a higher heart rate (HR) and a greater frequency of spontaneous skin resistance responses (SRRs). Compared to standing subjects, subjects under the seated condition demonstrated more rapid habituation of the OR as indicated both by a greater decrement in SRR frequency from the first to the last block of trials and by a greater proportion of subjects who failed to respond to any of the last 10 trials. The rate of spontaneous SRRs appeared to parellel these differences in habituation of evoked responses. There were no differences between groups in skin conductance level (SCL), or in either amplitude or frequency of the evoked electrodermal response over the first few stimulus presentations. The results were interpreted as supporting the conclusion that heightened arousal level retards habituation of the OR.

Voice Pitch

Streeter, Lynn A., Krauss, Robert M., Geller, Valeria, Olson, Christopher and Apple, William. "Pitch Changes During Attempted Deception," Journal of Personality and Social Psychology 35 (5)(1977): 345-350.

Two studies on speech samples from 32 male college students are reported. In the first, it was shown that the average voice fundamental frequency of the subjects was higher when lying than when telling the truth. In the second, judges rated the truthfulness of 64 true and false utterances either from an audiotape that had been electronically filtered to render the semantic content unintelligible or from an unfiltered tape. The truthfulness ratings of the judges who heard the content-filtered tape were negatively correlated with fundamental frequency, whereas for the unfiltered condition, truthfulness ratings were uncorrelated with pitch. Although ratings made under the two conditions did not differ in overall accuracy, accuracy differences were found that depended on how an utterance had been elicited originally. (Author abstract.)

Jurors and Detecting Deception on Videotape

Hocking, John E., Miller, Gerald R. and Fontes, Norman E. "Videotape in the Courtroom - Witness Deception," <u>Trial</u> 14 (4)(April 1978): 51-55.

The first of a three-part series on the use of videotape in trials, this article is concerned with the effects of videotaped testimony on jurors' ability to detect deception by witnesses.

The authors summarize the research on interpretation by jurors of witness behavior, and suggest that when untrained observers rely on nonverbal information, they are unable to distinguish reliably between lying and truth. The one study directly comparing detection accuracy of observers watching videotapes with observers watching live presentations found no significant differences in accuracy. Assuming that lying behavior is idiosyncratic, the authors believe that the content of testimony provides jurors with the best basis for accurate identification of veracity. On this assumption, the authors then ask if videotape affects juror comprehension of the content. They conclude that videotape may be superior, as it will reduce nervousness of witnesses which may be mistaken for lying. They assume that videotaping is less trying than testifying in court. Two subsequent articles in <u>Trial</u> will examine other aspects of videotaping, including editing out material that is stricken from the record, and other errors which may cause a mistrial or improperly influence a juror.

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TECHNICAL NOTES

By

Ronald E. Decker

PROCEDURE FOR CALIBRATING THE MODEL 22600 STOELTING GSR AMPLIFIER AND RECORDING COMPONENT:

- 1. Attach AC power cord to electrical outlet.
- 2. Install 7" GSR Recording Pen in GSR pen cradle.
- 3. Remove amplifier from the instrument. Rest amplifier on side over the amplifier opening.
- 4. Turn AC power switch to the ON position.
- 5. Set auto/manual switch to the manual position and set sensitivity control (R-4) to "O".
- 6. With a volt meter check to make sure that 20 volts DC are being received from the power supply board of the amplifier. (May be omitted to allow calibration. If calibration cannot be effected, voltage checks will have to be made.)
- 7. With a digital volt meter check voltage on the output stage of the emitter Q-5 (Test Point), raised loop for easy DC voltage reading. Read loop, one side to ground-probe. Adjust R-26 to .94 volts DC + or 5% (.045), with "O" sensitivity on control R-4. (May be omitted to allow calibration. If calibration cannot be effected, voltage checks will have to be made.)
- 8. Adjust R-16 to mid-way or center position.
- 9. Adjustment of chopper balance: Place auto/manual switch in "auto" position, sensitivity control R-4 to full sensitivity (100). Adjust R-8 so that GSR pen is on reference base line. (To check for proper adjustment, turn sensitivity control (R-4) from "100" to "0".) GSR pen should not move over 1/4 chart division from reference base line. (If movement is in excess of 1/4 inch, make further adjustments of R-8.)
- Amplifier Sensitivity Adjustment: Turn sensitivity control R-4 to 10. Press 1K test button (should have 1 inch pen deflection or 4 chart divisions). If proper pen deflection is not received make further R-16 adjustment.
- 11. The 5K button should give full upward GSR pen deflection.
- 12. Information: If the chopper cannot be balanced as set forth in paragraph 9 the gain on R-16 is too high (GSR pen will fall to the bottom of the chart when the auto/manual switch is placed in the auto position.)

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Polygraph 1978, 07(3)

POLYGRAPH REVIEW

Ву

Bobby J. Daily

How would you score on a licensing examination? Are you sufficiently up-to-date about such subjects as psychology, physiology, instrumentation, test question construction, chart interpretation, interview techniques, etc? Are you prepared to undergo direct and cross-examination on polygraph subjects in court? A score of 9 or 10 is excellent, 7 or 8 is good, and below 7 may indicate some review is warranted. (Answers on page 249.)

- 1. On a Stoelting Model 22500 instrument, the position of the resonance control is between:
 - a. the pump bulb and connector block.
 - b. the tambour and pen forks.
 - c. the connector block and tambour.
 - d. the pump bulb and manometer.
- 2. The chart drive mechanism nomenclature on the polygraph is:
 - a. Kymograph.
 - b. Rotograph.
 - c. Sphygmograph.
 - d. Pressure roller.
- 3. With a fairly loose cuff, usually the dicrotic notch will appear:
 - a. at the top of the diastolic stroke.
 - b. at the top of the systolic stroke.
 - c. at the bottom of the diastolic stroke.
 - d. at the bottom of the systolic stroke.
- 4. An effect of too heavy pen balance on the cardio is:
 - a. ink smearing on the chart.
 - b. damage to the jewel bearing.
 - c. loss of amplitude.
 - d. fluctuations in recorded pulse rate.
- 5. When a vegas roll is detected in the cardio, it:
 - a. is always accompanied by a visible change in the pneumo pattern.
 - b.' is never accompanied by a visible change in the pneumo pattern.
 - c. is sometimes accompanied by a visible change in the pneumo pattern.
 - d. is indicative of intentional distortions of the tracings.
- 6. (T) (F) Fear, anger, excitement and sorrow all affect skin resistance.

7. (T) (F) The usual pressure found in the pneumo section of a polygraph is atmospheric pressure.

- 8. (T) (F) When there is a system pressure increase in the pneumo section, the pen will go up.
- 9. (T) (F) The dicrotic notch is produced by the blood rebounding in the aorta and being suddenly checked by the semilunar valve.
- 10. (T) (F) The GSR is not affected by humidity.

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ANSWER KEY

1. С 2. а З. а 4. с 5. с 6. True 7. True 8. False 9. True 10. False

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