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BIOFEEDBACK, LIE DETECTION, AND PSYCHOPHYSIOLOGICAL ASSESSMENT OF DANGEROUSNESS[1]

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ABSTRACT

This paper describes recent research in the diagnosis of dangerousness using psychophysiological methods similar to those employed in biofeedback and field polygraphy. Investigations conducted during the past few years in Ohio and elsewhere suggest that information concerning individual patterns of skin resistance, cardiovascular, and similar responses may in the future be of value in assessing a client's propensity for engaging in violent behavior. This paper cursorily discusses the relationship between biofeedback, lie detection, and other psychophysiological assessment methods and addresses recent developments in this general area as they apply to the prediction of dangerousness. The paper also speculates on possible implications of these investigatory efforts for the pre-sentence evaluation process.

I welcome this opportunity to share with you recent research developments in the use of psychophysiological methods in the assessment of client dangerousness. Often when this topic is discussed, there is some confusion about the term, "psychophysiological". This is understandable in that this term has been employed historically in ways substantively different from its currently accepted usage. On the other hand, most professionals have a fairly good understanding of what biofeedback is about, and almost everyone, including particularly those in the criminal justice field, has some acquaintance with lie detection. Actually, both biofeedback and lie detection procedures are essentially applied psychophysiological techniques in that they involve monitoring ongoing physiological concomitants of psychological processes in functioning human beings. Additionally, since much of the rationale for the recent development of procedures for the psychophysiological assessment of dangerousness stems from experience with biofeedback and lie detection, it is perhaps best to focus more closely on these two areas before discussing applicable research findings concerning dangerousness.

The field of biofeedback has evolved only during the past 15 years or so. In this short period, this phenomenon has come to generate considerable excitement both scientifically and in the popular press. Biofeedback has been called the field where the mysticism of the East meets the science of the West; it has been associated with Zen meditation and other altered states

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of consciousness; and it has been hailed as a palliative, or even a cure, for numerous illnesses including many which are resistive to more traditional medical approaches. In actuality, the techniques of the biofeedback phenomenon are really fairly simple and at least on the surface, not what one would expect to be the basis for such enthusiasm. Biofeedback is essentially no more than the use of sensing devices to pick up changes in one's physiological processes which can then be displayed, or fed back, either visually or auditorily to the person from whom they are being taken. This process is often accomplished by using high-powered electrical amplifications of extremely weak signals. Biofeedback can be of brainwave activities (EEG) or of blood pressure, heart rate, or other cardiovascular measures. Using the biofeedback technique with skin temperature and facial muscular activity is currently very popular with therapists. Still other forms of biofeedback include monitoring changes in the electrical resistance of the skin (GSR), changes in the rate and depth of respiration, and degree of gastro-intestinal tract motility. Additionally, various other more esoteric physiological processes have been and are being employed with biofeedback techniques.

A major reason for the blossoming popularity of biofeedback is that when clients learn to control their physiology by raising the temperature of their hands, by reducing the resting level of their muscle tension, or by going into an alpha state with their EEG, they often subjectively experience a feeling of greater relaxation. Sometimes this relaxed feeling is also accompanied by a gradual relief from physical symptoms of anxiety or stress. Individuals using biofeedback are also given feelings of self-control over major areas of their activity which previously were most likely considered to be essentially automatic or otherwise out of the range of voluntary control.

While biofeedback techniques have received their attention in recent years primarily due to their treatment applications, it is important to remember that the techniques for non-invasive recording of physiological processes have been employed by human service professionals for some time. In the applied setting these techniques have primarily been employed as methods of assessment.

Blood pressure, EEG, EKG, and other non-invasive psychophysiological measures have been effectively employed in medical diagnostic work for decades. But these applications are for determining medical disorders, not psychological states. In the criminal justice field, however, diagnosis of deception, or lie detection, using recordings of physiological indices has been well established in investigatory work since the 1930's and has recently begun to be accepted as evidence in courtroom proceedings. Field polygraphy, as the technique is sometimes called, is a refined procedure for monitoring physiological processes as they are related to a specific psychological state. Particularly during the past decade, experimental psychologists and other researchers have consistently demonstrated the high degree of efficacy of the field polygraph in detecting deception or, more precisely, in indicating to the examiner the pattern of psychophysiological responding indicative of the stress accompanying deception.

The standard field polygraph enables an examiner to record skin resistance activity, relative blood pressure and respiration. With the relevant-irrelevant question technique, for example, an examiner can compare a subject's

responsivity to relevant, or critical, questions with his responses to irrelevant questions. Comparatively greater responding to critical questions is seen as being indicative of deception. Several years ago, a research group of which I was a part at Ohio University became aware of the studies indicating the accuracy of the psychophysiological field polygraph technique. We recognize it as a sophisticated procedure capable of accurately diagnosing the degree of an emotional reaction in a given individual. Building on this realization, we hypothesized that psychophysiological diagnostic techniques might be developed for assessing similar reactions in situations where deception was not an issue. Because the instrumentation for lie detection was already in existence in the criminal justice system, we wanted to focus on a problem area of importance to criminal justice professionals.

For many years, work has been done by Hare (1970) and others on identifying psychophysiological activity peculiar to psychopaths, but the very complex problems in keeping a consistent definition of exactly which clients are psychopaths appeared to make work in this area unpromising for us. Somewhat surprisingly, however, few investigations into the psychophysiological correlates of dangerousness had been attempted. Since dangerous acts are often accompanied by anger or other strong emotional episodes, dangerousness seemed to be an appropriately promising area for investigation.

With our thoughts along these lines and being armed with the knowledge of the accuracy of the field technique, we made arrangements to establish laboratories in two correctional facilities in southern Ohio, where we used a six-channel Grass polygraph to conduct our investigation.

In each facility we divided volunteer subjects into three groups: inmates with a history of violent activity; inmates with no record history of violent behavior; and institutional employees (normal controls). To each subject we presented eight or ten slides of violent scenes and of neutral, or non-violent scenes. In the first correctional facility we recorded skin resistance, respiration, and two measures of cardiovascular activity, heart rate and vasomotor changes. We recorded the latter two responses knowing that the relative blood pressure response taken by field polygraphers could not practically be monitored due to subject discomfort and instrumentation inadequacy. We could run only a few subjects per group in the first facility, and treated our experience there primarily as pilot work. We did find difficulties in recording the respiration and vasomotor responses and decided it would be judicious to eliminate these responses when we moved to the larger correctional facility. In the second institution, skin resistance and heart rate were recorded from 30 subjects in each group as they viewed the same slides.

Analysis of the data showed that heart rate activity was not significantly different among the groups. This was not too surprising in that heart rate alone is also a relatively ineffective response when employed in field polygraphy. Skin resistance activity, however, which is a relatively effective response in field polygraphy, proved to be more interesting. During the first ten seconds after slide presentation, frequency of skin resistance response increased by about 24% for both the control and the non-violent groups when responses to violent slides were compared to those for the neutral slides. For the violent subjects, however, the increases averaged about

65% when the violent slides were viewed. This is a factor of more than two and a half times the increases for either the normal or the non-violent group. This, of course, was the sort of result we had hoped to attain when we embarked on this project.

Caution must be maintained because results obtained by averaging subject's responses can be misleading if used in interpreting responses from individuals. Nevertheless, the fact that we did obtain significant differences between the groups is encouraging.

Subsequent to the initial presentation of our findings (Kotses, Glaus, & Frese, 1976) the results of two related investigations have been reported. Both these studies involved identifying the psychophysiological predictors of child abuse. One of these studies was reported last year (Frodi & Lamb, 1978). It involved comparing the physiological responses of 14 abusive and 14 non-abusive mothers to two viodeotaped presentations of an infant who either smiled or cried. Heart rate, skin resistance, and blood pressure were monitored. The findings were that the child abusers reacted significantly more for all responses to the crying infant and significantly less to the smiling infant. As was true in our Ohio study, we can see that scenes associated with violence or pain elicited greater physiological reactivity in persons with tendencies to behave violently. The other child abuse study was done by a group at the University of Washington (Doerr, Disbrow, & Caufield, 1977). These investigators recorded physiological activity while members of groups of child abusers, child neglectors, and a control group watched tapes displaying adult-child interactions. These investigators were explicitly seeking to find out "whether it is possible to develop a predictive counseling and education" (p. 2). Once again significant differences between abusers and controls were found. Although some of the specific findings of this study were not entirely consistent with the proposition that violence-prone individuals are more reactive to violent scenes, child abusers did show significantly more heart rate variability from one stimulus condition to another than did the controls.

The findings of these three research efforts support the contention that groups of assaultive or otherwise dangerous subjects can be differentiated from non-dangerous subjects on the basis of their physiological responses. These results are certainly not definitive and, of course, I am not suggesting that psychologists or others are now prepared to pick up a polygraph, present a few pictures or questions to a client, and make judgments as to whether or not he is likely to become violent or neglect his children. However, if I might take the liberty to speculate as to possible future developments, perhaps the results of these studies suggest that the technology may soon be coming whereby professionals might be able to employ polygraphs or other psychophysiological assessment instruments, perhaps along with traditional diagnostic methods, in more efficaciously providing information about dangerousness to clients, case workers, and other professionals. Hopefully such technology could possibly increase the value of the reports currently available in human service delivery systems.

But I would like to speculate still further as to the applied possibilities for psychophysiological methods in the criminal justice system by bringing this presentation to full circle. I opened this talk discussing the current employment by therapists of biofeedback procedures. I mentioned that the

biofeedback tecnhique has been shown to enable clients to ameliorate psychological dysfunctions by learning to control overly active physiological processes. If the physiological processes which may accompany uncontrollable violent behavior can be identified, might it not be possible that clients who are likely to become violent could be trained through biofeedback-like techniques to control their violent inclinations? As a more specific speculative example, if a client who was highly reactive physiologically to scenes of violence also had a history of engaging in violent behavior, could it be possible to train that client to control his physiological activity with the hope that the physiological threshold for overt violent behavior could be avoided? Could he be taught to control his physiological urge for violence so that when he was excited or angered by frustrations, insults, or other aggression-provoking stimuli, the probability of his engaging in overt violent acts could be lowered?

These are the questions future research efforts may address.

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To seek for the truth, for the sake of knowing the truth, is one of the noblest objects a man can live for.

-- W. R. Inge.

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THE EFFECT OF POLYGRAPH EVIDENCE ON MOCK JURY DECISION-MAKING

Alan Markwart and Brian E. Lynch

The admission of polygraph evidence in court testimony is of international interest. It has been ruled admissible in one fairly recent case in Canada,[1] and Abrams reports that it has been admitted in Japan, Poland, and Switzerland.[2] Barland and Raskin report of its known use in Mexico, Brazil, Argentina, Puerto Rico, France, Israel, Iran, Nationalist China, Thailand, and the Philippines.[3]

In the United States, the first court test, in 1923, of the admissibility of polygraph evidence resulted in its rejection on the grounds of the technique's lack of acceptance in the scientific community.[4] Since that time a variety of other objections to admission have been raised, the primary ones being inadequate accuracy, the hearsay nature of the evidence, the violation of the privilege of self-incrimination, and the fear that it may invade the province of the jury. These objections have been resolved, however, in the view of some courts, as polygraph testimony has been ruled admissible in several jurisdictions with stipulation and in some cases has even been admitted over objection.[5] Such increasingly favorable attitudes toward polygraph evidence displayed by the courts suggests that more general admission may be in the offing.

It is the opinion of at least two reviewers of this issue that the prime reason for the general exclusion of such evidence from the courts in the U.S. at present is that it may have an undue influence on juries.[6] This concern centers around the fear that because of the scientific/technical nature of the evidence and because it seeks to answer the very issue the jury is concerned with (the credibility of the accused), it may well decide the case for the jury and thus usurp its function. The critical issue, then, is whether juries will accept the findings of the polygraph uncritically or, more properly, view it in relation to all other evidence and accept it only as a guide.

Relatively little research has been conducted in this area, and what has been done has yielded conflicting results. Two studies have attempted to survey the impact of polygraph evidence by questioning actual jurors who had deliberated in cases where polygraph results were admitted in evidence.

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First, Forkosch questioned ten jurors who had deliberated in a 1938 case, in which such evidence was admitted.[7] While none of these jurors indicated their decision was based on the polygraph evidence alone, five of the jurors were so impressed by the scientific value of the evidence that they accepted it without question. Six felt the evidence demonstrated conclusive proof, and four indicated they would accept polygraph results as conclusive if they served as jurors again. In a second study, Barnett interviewed eight of twelve jurors following a 1973 trial.[8] These jurors, who arrived at a verdict consistent with the findings of the polygraph, indicated that while they were impressed by the polygraph evidence, they put aside their results while considering other testimony. They also indicated, however, that if the evidence had been more ambiguous, the polygraph results would have been sufficient to raise a reasonable doubt. Clearly the first of these studies suggests polygraph results may have had an undue influence, while the second suggests it acted, at best, as an aid. The differences here may reflect changes over the past few decades in jurors' familiarity with and susceptibility to impression by scientific techniques and data.

Two quasi-experimental studies have also attempted to measure the impact of polygraph evidence on mock juror decision. Koffler, a law professor, gave 20 third-year law students a brief summary of the facts of a case, with only fragmentary evidence pointing to the accused's guilt, and asked them to render a decision.[9] The same students were subsequently asked to twice more decide the case, with there being evidence that a lie detector test found the accused to be lying. In the first condition, the polygraph was characterized as 85 percent accurate, 14.5 percent inconclusive, and 0.5 percent inaccurate; and, in the second condition, 99.5 percent accurate and 0.5 percent inaccurate. With no polygraph evidence, all students found the accused not guilty. In the first experimental condition, 8 of the 20 changed their decision to guilty; and in the second, 17 changed to guilty. Koffler concludes from these results that the polygraph evidence acted as a substitute for proof of guilt and expressed a concern that the innocent accused will be found guilty on the basis of this evidence alone if it is admitted in testimony.

Apart from the questionable procedural practices of utilizing law students as subjects and not using different subjects in each condition, this study is problematic insofar as the students were given no caution about the weight they might attach to such testimony and the characterization of the polygraph accuracy was improbably high. If the polygraph were infallible, there is little doubt it would usurp the jury's function. The extraordinary accuracy given here merely invites such a possibility.

In a more recent study, Carlson, et al., gave a take-home questionnaire to 100 jurors (students and persons from the community) who had deliberated in eight criminal and civil moot trials at Yale Law School.[10] The questionnaire instructed the jurors to assume that a polygraph expert had examined a witness who had testified at the trial they had served on and asked them to redecide the case. The polygraph was characterized as 70 percent accurate for one-half of the jurors, and 95 percent for the other half. The polygraph evidence, presented as damaging to the party at the trial, was in conflict with the initial decisions of 31 of the 55 jurors who responded to the questionnaire. Of these, 6 indicated they would change their decision, 7 were uncertain, and 18 indicated they would not change. The lower the accuracy

given for the polygraph, the less likely the juror was to change his decision. Of 31 jurors given an accuracy of 95 percent, 8 felt this testimony was more significant than the testimony of other witnesses; none of the 24 given an accuracy of 70 percent preferred this opinion; while the majority in both groups felt it to be equally significant. Without prompting, 10 of the respondents expressed distrust of polygraph findings. The researchers conclude that polygraph testimony does not unduly influence jurors and that at least 1 person in 5 can be expected to arrive at the courthouse with a distrust of polygraphs.

While these results are suggestive, there are, as the researchers recognize, limitations to their study: the jurors did not actually see the testimony of the polygraph expert; only 55 percent responded to the questionnaire; they had already publicly announced their decisions and might be reluctant to change them; and there may be a discrepancy between what persons say or believe they might do and their actual behavior.

To date, there has not been a study of this issue attempted by using control and experimental groups in a mock-jury situation. The following describes such an effort.

Method

The aim of this experiment was to present to different jurors a case without polygraph testimony, the same case with added polygraph evidence favorable to the accused, and again the same case with polygraph evidence unfavorable to the accused. This would allow a controlled measure of the impact of favorable and unfavorable polygraph results. This required developing case presentations identical in all respects, with the exception of the insertion of the experimental variable.

A transcript of a jury trial already heard in the Ontario Supreme Court was obtained.[11] Briefly, this case involved a murder arising from an armed robbery of a store. The accused was charged with murder resulting from being a party to the offense. That is, while he waited outside of a store, his alleged accomplice (who pleaded guilty) went inside and shot and killed a bystander who attempted to intervene. The accused's defense was that he was compelled by his alleged accomplice to participate in the robbery. Generally, the evidence was strongly circumstantial in nature.

A four-page summary of the facts of the case and the arguments of the defense and prosecution were constructed. These summaries were identical for all three conditions except for the inclusion of the polygraph evidence in the two experimental conditions. In addition, videotapes were made of a judge, played by an amateur actor, delivering preliminary instructions to a jury (5 minutes) and a charge to the jury (40 minutes). This charge, which summarized the testimony in the case and outlined legal considerations, was identical to that delivered by the judge in the actual trial, with the exception of changes of names and minor adjustments to simplify the evidence somewhat. Two copies were made of this charge and additional videotaped materials concerning polygraph evidence were edited in. In this testimony the polygraph was characterized as being 90 percent accurate, an estimation based on review of the research.[12] In addition, however, it was stated that polygraph results yielded a preponderance of false positives when in error, this being a concern

reflected in most recent research.[13] False positives in lie detection refer to the misidentification of an innocent person as one who is not telling the truth. The polygraph expert's testimony was directed toward a test of the accused's veracity only, not of other witnesses. The judge cautioned the jury that the polygraph was fallible and should not be viewed as conclusive, but rather as a guide and considered in relation to all other evidence given.

Jurors were volunteers from day and evening classes in first-year psychology at the University of Ottawa. The jurors assigned themselves to groups according to when they were available, but were not informed of the intent of the experiment. On arrival, the subjects were given a short personal characteristics questionnaire and were then shown the videotape of the judge's preliminary instructions to the jury. A foreman was then chosen by random number. They were then given the written summary of the facts of the case (they also listened to a tape recording of this) and were shown the judge's charge. Following this, a questionnaire inquired about the realism of the presentation and asked for a preliminary individual verdict, which was not announced to the others. The jurors were then instructed to strive toward unanimity (but advised that a hung jury would be permissible), and their 45-minute deliberations were tape-recorded. Deliberations were followed by another questionnaire concerning their opinions on the polygraph evidence and a group discussion. Total time for the experimental procedure for each jury was approximately 2.5 hours.

Twelve juries were run, four in each condition. One hundred and twenty-two jurors participated, an average of ten per jury. In fact these juries ranged from a low of eight participants to full juries, the smaller juries resulting from some nonappearances. The jury sizes were intentionally balanced in each condition to equalize any confounding effects resulting from this.

Results

The mean age of the jurors was 22.7 years, with a range from 18 to 46 years. Females comprised 61 percent of the subjects. The control group was composed of equal numbers of males and females, while the experimental groups were composed of balanced proportions of each sex (66.6 percent female and 68.3 percent male). All jurors, except one with a bachelor's degree and one with a graduate degree, had completed high school and some university. All but seven indicated either they or their parents were in a middle-income range or better (income greater than $10,000 per year). Only eight indicated previous jury or mock jury experience. The presentation was characterized as very realistic by 48 percent of the subjects, somewhat realistic by 40 percent, only a little by 5 percent, with one person indicating it was not at all realistic, and 7 percent expressing no opinion. After the charge, 74 percent indicated that they were given sufficient information to make a decision; 10 percent said not enough, with 16 percent expressing no opinion. Two-thirds indicated they understood the judge's instructions completely, with the remainder, except one person, understanding the instructions somewhat. In addition, analysis of the tape-recorded deliberations indicated that all juries were seriously attentive to the task assigned.

Jury Decisions

Both predeliberation and final decisions registered by each juror are

presented in Table 1.

TABLE 1

A Breakdown of Predeliberation and Final Decisions for All Juries

Evidence	Predeliberation Decisions		Final Decisions	
	Guilty	Not Guilty	Guilty	Not Guilty
No Polygraph:				
Jury 1	3	7	2	8
Jury 2	8	4	0	12
Jury 3	4	5	3	8
Jury 4	4	7	3	8
Total	19 (45%)	23 (55%)	5 (12%)	37 (88%)
Unfavorable Polygraph:				
Jury 1	6	3	6	3
Jury 2	7	1	8	0
Jury 3	8	4	7	5
Jury 4	7	5	6	6
Total	28 (68%)	13 (32%)	27 (66%)	14 (34%)
Favorable Polygraph:				
Jury 1	5	3	7	1
Jury 2	1	8	0	9
Jury 3	5	5	6	4
Jury 4	4	8	3	9
Total	15 (38%)	24 (62%)	16 (41%)	23 (59%)

Final decisions only:

All Conditions	$X^2 = 25.35$, $p < .001$
Control + Unfavorable	$t(81) = 5.99$, $p < .001$
Control + Favorable	$t(79) = 3.13$, $p < .01$
Unfavorable + Favorable	$t(78) = 2.27$, $p < .05$

Interpretation of this data must be done cautiously. It is suggested that because the control group yielded a preponderance (88 percent) of not guilty final decisions and a relatively even split between guilty (45 percent) and not guilty decisions (55 percent) at the predeliberation stage, this was not a clear-cut case. In addition, the findings that only 4 of 42 jurors were very sure of their decisions at the predeliberation stage, and the lack of unanimity for two juries at the final decision, suggest further that this was, in fact, a rather ambiguous case. Such a case should then be sensitive to the addition of new evidence.

It seems that the addition of polygraph evidence, for some at least, may have resolved any ambiguity about the case and formed their initial decision. Without polygraph evidence, there were 13 (31 percent) decision changes from predeliberation to final decision; but with unfavorable polygraph evidence, only 3 (7.3 percent) jurors changed decisions; and in the favorable condition, only 5 (13.1 percent) made decision changes.

Clearly, the controlled introduction of polygraph results unfavorable to the accused had a significant ($t(81) = 5.99$, $p < .001$) impact on the juror's decision-making, compared to no polygraph information. Guilty findings were increased from 12 percent in the control condition to 66 percent with this added evidence. In only one jury, significantly a smaller one, was this impact sufficient to yield a unanimous guilty finding.

When favorable polygraph evidence was introduced, some mixed and unanticipated results occurred. It would be expected that with a preponderance of not guilty findings in the control condition, the addition of evidence favorable to the accused should at least reinforce such findings, if not strengthen them. This held true at the predeliberation decision stage (55 percent not guilty in the control, 62 percent in the experimental). However, the introduction of favorable polygraph evidence actually resulted in a significantly greater number of guilty decisions ($t(79) = 3.13$, $p < .01$) at the final decision level. When no polygraph evidence was introduced, 12 percent of the jurors found the accused guilty at this point. In contast, when there was favorable polygraph evidence added, 41 percent found the accused guilty. It should be noted, however, that juries 1 and 3 in the favorable polygraph condition are responsible for the increase in the percentage of final guilty votes. The other two juries in the condition (14 percent guilty) are consistent with the 12 percent guilty result in the control condition.

A further exploration of the data was undertaken to attempt to explain this unanticipated effect. The subjects in both experimental groups were dichotomized according to whether their final decisions concurred or disagreed with the findings of the polygraph. Cross-tabulation of this dichotomy with sex yielded only a very slight relationship (Yule's $Q = .05$),[14] while there was insufficient variability in educational or economic status to warrant exploration of these factors. However, using the mean age of 22.7 as a guide, a cross-tabulation of concurrence or disagreement of final decisions with the findings of the polygraph and age (those 23 and under, and those 23 years and over) yielded significant results.

As presented in Table 2, there was a very strong relationship (Yule's $Q = .72$) between age and concurrence or disagreement. Those under the age of 23 were not disposed to agree or disagree with the findings of the polygraph; however, 86 percent of the decisions of those 23 years or older did concur with the findings of the polygraph. It was then found that 16 of the 17 jurors in juries 1 and 3 of the favorable polygraph condition were under the age of 23, while ages were more balanced in the remaining experimental groups (34 under 23 years, 28 over). This, of course, does not explain why those under 23 years had reacted to such evidence in such a way and why among those over 23 favorable polygraph evidence had no apparent effect. This will be attempted in the discussion. This finding does, however, have implications for the interpretation of these results. No doubt most of those chosen from a typical jury pool are over the age of 23, and since those over

that age in this study appear more willing to concur with such findings, the introduction of polygraph evidence may thus have greater impact in a real jury situation. This conclusion should be drawn very guardedly, as this is an association that may be confounded by other factors. Perhaps these differential age groups simply interpreted the other evidence in different ways and arrived at different conclusions irrespective of the polygraph evidence or differed in any of a number of other ways.

TABLE 2

Association Between Decision Agreement and Age

Agreement Between Verdict And Finding Of Polygraph Evidence	A G E		
	Less Than 23 Years	23 Years or More	Total
Decision concurs	26 (51%)	25 (86%)	51
Decision disagrees	25 (49%)	4 (14%)	29
Total	51	29	80

Yule's Q = .72.

Juror Deliberations and Attitudes Toward the Polygraph

While it is clear from the decisions made that polygraph evidence had a demonstrable impact on juror decision-making, it would appear that it did so without the conscious awareness of most of the jurors. Group discussions with the juries indicated that they all attended little to the polygraph evidence in their deliberations. Post-test analysis of the tape-recordings of seven of eight of the experimental juries (the tape-recorder malfunctioned during one jury deliberation) corroborated this finding. An average of only 3.9 percent of the deliberation time, with a range from 1 to 9.5 percent, was devoted to discussion or mention of the polygraph evidence. Three juries dismissed this evidence quickly, virtually with no discussion. The larger amount of time (9.5 percent) spent in discussion of this issue (in jury 3 of the favorable polygraph condition) was attributable to the influence of one outspoken polygraph advocate, randomly chosen as the foreman. Looking at the results of this particular group's decisions, which conflicted with the findings of the polygraph, it is evidence that his influence was not substantial. There was no relationship between the amount of time spent in discussion of the polygraph and the degree to which the juries' final decisions concurred with the findings of the polygraph. While the jurors attended little to the polygraph results, perhaps more attention would have been devoted to it had the deliberations not been limited to 45 minutes. It is clear, however, that the polygraph evidence was considered in the deliberations to be worthy of less attention than other evidence.

Most jurors did not express opinions about the polygraph in deliberation. When opinions were expressed, however, they reflected several themes and a wide variety of attitudes. Some simply dismissed it; e.g., "I don't believe in it!" Conversely, two persons appeared to accept the findings uncritically; e.g., "I think the whole premise of the case should rest upon that." The 90 percent accuracy given was construed differently; e.g., "It's only 90 percent accurate," or "Be realistic - 90 percent and that's not a reasonable doubt." Some more moderate views did prevail, however; e.g., "It's a helpful too.," or "It's just added evidence." Finally, considerable suspicion was expressed by some jurors; e.g., "I tend to suspect it ... it's not human!"; "Maybe he screwed up the machine"; "If I was in his position I'd take it to confuse people"; or "He had nothing to lose by taking the test." These latter comments reflected a suspicious concern that a defendant and his counsel may request a test as a ploy and, if the results were unfavorable, simply claim that the test was in error on that occasion and that the defendant's true sincerity is to be measured by his willingness to take the test. In essence, while polygraph evidence may be presented matter-of-factly in a situation such as this, such results may be interpreted in widely different ways. Although it tended to be discussed relatively little, when it was discussed, it seemed to arouse strongly held opinions among jurors rather than a detached evaluation of its merits.

TABLE 3

Relationship Between Polygraph Evidence and Jurors' Faith In and Perceived Significance of the Polygraph

	POLYGRAPH EVIDENCE		
	Unfavorable	Favorable	Total
Faith in polygraph:			
A great deal	1	1	2
Some, it's helpful ...	18	27	45
Little	17	9	26
None at all	4	0	4
Don't know	1	2	3
Perceived significance of polygraph evidence:			
More significant	3	3	6
Equally significant ..	3	10	13
Less significant	35	26	61

The postdeliberations questionnaire indicated that of the 80 subjects in the two experimental groups, 30 percent described themselves as very familiar with the polygraph prior to the experiment, 61 percent as somewhat familiar, 8 percent as only having heard of it, and 1 person not at all familiar with it. Table 3 illustrates the degree of faith these jurors expressed in the polygraph and their rated significance of the polygraph evidence in relation to the other evidence presented. These results confirm the findings of Carlson, et al., that many have a distrust of polygraphs;

almost 2 in 5 persons expressed little or no confidence in polygraphs. According to these results, there appears to be little danger that many jurors will uncritically accept the findings of the polygraph. Most have only some faith in it, and the vast majority considered it less significant than other evidence.

For the purposes of analysis, those describing themselves as having a great deal or some faith in the polygraph were classified as having a favorable attitude toward the polygraph, while those expressing little or no faith were classified as having an unfavorable attitude. A cross-tabulation of these attitudes with concurrence and disagreement of final decisions with the findings of the polygraph appears in Table 4. As expected, a strong relationship (Yule's Q = .54) is indicated; 75 percent of those exhibiting a favorable attitude toward the polygraph concurred with its findings; however, negative attitudes toward the polygraph are distributed fairly equally among concurrences and disagreement with polygraph findings.

TABLE 4

Association Between Decision Agreement and Attitude Toward Polygraph

Agreement Between Verdict and Finding of Polygraph Evidence	Attitude Toward Polygraph		
	Positive	Negative	Total
Decision concurs	35 (75%)	14 (47%)	49
Decision disagrees ..	12 (25%)	16 (53%)	28
Total	47	30	77

Yule's Q = .54.

A similar cross-tabulation of attitudes with age yielded no relationship. Those under the age of 23 held proportionately as positive or negative attitudes toward the polygraph as did those over the age of 23. The findings here that the expression of a positive decision concurrence with the findings of the polygraph, while negative attitudes do not, should again be taken advisedly. Since the question about the polygraph was asked after the experiment was concluded, such expressed attitudes may be confounded by the experiment itself. That is, concurrence or disagreement with the findings of the polygraph, arrived at on the basis of other evidence, may have produced more favorable or more negative attitudes toward the polygraph.

Summary and Discussion

Few jurors in this experiment expressed attitudes which would suggest that they accept polygraph evidence uncritically. Most saw it only as helpful, and many indicated suspicion of the test. Further, the jurors attended little to the polygraph evidence in deliberations, and most saw the evidence as less significant than other evidence. In spite of this, however, it is clear that polygraph evidence unfavorable to the accused has a sufficient

impact to significantly change the voting patterns of mock jurors, particularly those over the age of 23. Since those above the age of 23 are likely more representative of a typical jury pool, then possibly a similar or perhaps even greater impact could be expected in a real jury situation. These findings should be interpreted in light of the strong suggestion that this was an ambiguous case. Thus, it may be concluded that unfavorable polygraph evidence may be a deciding factor in such an ambiguous case. Whether this can be construed as an "undue influence," however, is subject to debate. Certainly polygraph evidence would be expected to have some impact on jury deliberation, otherwise there would be little point in introducing test findings into evidence in the first place. It seems clear that these mock jurors did not decide this case on this evidence alone. Any other type of new evidence unfavorable to the accused may have produced the same effect. If polygraph evidence is viewed as "proper" evidence, like any other evidence, then perhaps such an influence is not inappropriate. The real issues, then, may be whether polygraph evidence is, in fact, proper and whether the courts and public should consider such evidence when deciding ambiguous cases. Moreover, it has yet to be determined, in a controlled experimental situation, what impact polygraph evidence may have on jurors when that evidence clearly contradicts the trend of other evidence.

Quite frankly, the differential decisions made by those under the age of 23 remain a mystery, particularly since those in that age group expressed no more negative or positive attitudes toward the polygraph than those over that age.

The finding that polygraph evidence favorable to the accused may have no effect or unanticipated effects, though apparently confounded here by the effects of age, is curious and certainly requires further study. Such a possiblity is of particular interest and importance to accused persons and defense counsel. There may be some explanation for this. The polygraph is commonly known as a lie detector, not as a detector of both truth and deception. This orientation in the mind of the layman, coupled with the suspicion that the test "can be beaten", may predispose persons to more ready acceptance of the detection of deception, rather than the detection of truth. This is rather ironic considering that some findings suggest that polygraph errors are predominantly false positive. Moreover, although not confirmed in this study, the distrustful attitude toward the polygraph exhibited by many, and the suggestion that it may be used as a defense ploy, may predispose some jurors toward a more unfavorable view of the defense's case. That is, these negative attitudes toward the polygraph and perceived legal maneuvers may create some dissonance, resolved by the formation of more negative attitudes toward the accused's case. This explanation seems to be confirmed by examining the pre- and post-deliberation decisions in the favorable polygraph groups. At pre-deliberation the decisions were consistent with the expected direction, but not so in the final decisions. Obviously something occurred during the jury discussions that affected decision-making, this perhaps being the expressed cynicism by some jurors about such results and perceived legal maneuvers affecting other jurors.

There are some limitations to this study that should be noted. The subjects were not randomly selected from a typical jury pool. Further, the degree of comparability between mock jurors' decisions, whose judgments have no real impact, and the verdicts of real jurors in unknown.[15] The mock jurors

here did not have the opportunity to observe a polygraph expert testify. In a real jury situation, such expert testimony may dispel preconceived suspicions and misunderstandings of the polygraph and thus possibly result in the polygraph results having greater impact.

The choice of a murder case here is reasonable; however, polygraph evidence may impact in different ways with different types of cases. In this regard, Simon and Mahan asked real jurors, judges, and students to give the probability required of a crime having been committed by a defendant in order to return a guilty verdict for 14 different crimes. They found that murder required the highest degree of probability, with lesser crimes requiring lesser probability.[16] It is possible, then, that polygraph evidence may have a greater impact in cases of less seriousness than murder.

Thus, further research is required to compare the effects of additional polygraph testimony to additional other testimony, the effects of polygraph evidence conflicting with the obvious trend of other evidence, the effects of variation in the stated degree of reliability, and the effects in different types of cases. Some of these variables are being considered in further research being conducted by the authors.

Footnotes

[1] Regina v. Wong, 1.W.W.R. (B.C.S.C.)(1977).

[2] Stanley Abrams, A Polygraph Handbook for Attorneys (1977).

[3] Gordon H. Barland and David C. Raskin, "The Use of Electrodermal Activity in the Detection of Deception," in W.F. Prokasy and D.C. Raskin (eds.), Electrodermal Activity in Psychological Reseach (1973).

[4] Frye v. United States, 293 F. 1013, 54 U.S. App. D.C. 46 (1923).

[5] For thorough reviews of pertinent U.S. court decisions, see Abrams, supra note 2, or John E. Reid and Fred E. Inbau, Truth and Deception: The Polygraph ("Lie-Detector") Technique (1977).

[6] See J.R. Richardson, Modern Scientific Evidence (1961), and Abrams, supra note 2.

[7] M.D. Forkosch, "The Lie Detector and the Courts," N.Y.U.L.Q.Rev., 117 (1939), 202-231.

[8] F.J. Barnett, "How Does a Jury View Polygraph Examination Results?" Polygraph 2(1973), 275-277.

[9] J. Koffler, "The Lie Detector-A Critical Appraisal of the Technique as a Potential Undermining Factor in the Judicial Process," N.Y.L.F., 146 (1957), 3123-3139.

[10] Stephen C. Carlson, Michael S. Passano, and Jeffrey A. Jannuzzo, "The Effect of Lie Detector Evidence on Jury Deliberations: An Empirical Study," J.Police Sci. & Adm., 5 (1977), 148-154.

[11] Regina v. Paquette, 19 C.C.C. (20) 154, S.C.R. (20) 1 (1974).

[12] See Douglas E. Wicklander and Fred E. Hunter, "The Influence of Auxiliary Sources of Information in Polygraph Diagnoses," J.Police Sci. & Adm., 3 (1975), 405-409 (92.5 percent accurate); Stanley M. Slowick and Joseph P. Buckley, "Relative Accuracy of Polygraph Examiner Diagnoses of

Respiration, Blood Pressure, and GSR Recordings," J.Police Sci. & Ad., 3 (1975), 305-310 (87.2 percent accurate); Frank S. Horvath and John E. Reid, "The Reliability of Polygraph Examiners' Diagnoses," J. Crim. L., C., & P.S., 62 (1971), 271-281 (94 percent accurate for experienced examiners); Fred L. Hunter and Philip Ash, "The Accuracy and Consistency of Polygraph Examiners' Diagnoses," J. Police Sci. & Adm., 1 (1973), 370-375 (86 percent accurate); P. J. Bersch, "A Validation Study of Polygraph Examiner Judgments," J. Appl. Psych., 53 (1969), 399-403 (74-6 - 92.4 percent accurate); Stanley Abrams, "Polygraph Validity and Reliability: A Review," J. For. Sci., 18 (1973), 313-326 (a review of the literature indicating 81 percent accuracy in laboratory experiments and better than 90 percent in field studies).

[13]David C. Raskin, Gordon H. Barland, and John A. Podlesny, "Validity and Reliability of Detection of Deception," Polygraph 6 (1977), 1-38 (four experiments: 95 percent accuracy, 100 percent false positive errors; 89 percent accuracy, 20 percent false positives; 86 percent accuracy, 70 percent false positives; 90 percent accuracy, 61 percent false positives).

[14]See, John H. Mueller, Karl F. Schuessler, and Herbert L. Costner, Statistical Reasoning in Sociology (3rd ed. 1977).

[15]K. Gerbasi, M. Zuckerman, and H. Reis, "Justice Needs a New Blindfold: A Review of Mock Jury Research," Psych. Bull., 84 (1977), 323-345.

[16]R. Simon and L. Mahan, "Quantifying Burdens of Proof," L. & Society Rev., 5 (1971), 319-330.

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POSSIBILITY OF DETECTING DECEPTION BY VOICE ANALYSIS

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ABSTRACT

Measures of voice pitch, intensity, and duration were recorded and measured with apparatus used for the analysis of voice from tape recordings. Analysis was made of seventy-five answers to relevant crime questions from polygraph tests in real criminal cases in which the answers were verified as deceptive by subsequent confession or by medical jurisprudence. Each of the three methods were measured against chance, and none exceeded chance. The duration of the subject's answers showed a higher detection rate than did analysis of intensity (frequency analysis) or analysis of pitch (frequency of highest and lowest voice pitch). The authors concluded that these voice measures were not reliable or useful. [N.A.]

Preface

In order to refine the lie-detection technique, an improvement in the indices measured by the polygraph is important. Many workers have paid attention to new indices including EEG, plethysmograph, EMG and others and which restrict, to some extent, movement of the subject on account of attachment of a sensor. Since voluntary control of voice is easy, the use of the voice has not become a subject of discussion in Japan in lie detection technology. Therefore, only a few studies have been done on this subject. Maki (1968) using a noise meter studied the changes in voices; Fay and Middleton (1941) made a study on subjective analysis of voices; and Alpert et al.(1963) used two types of band-pass filters of 100-6000 Hz and 100-250 Hz to analyze voices. Maki suggested the possibility of using changes in voices as a supplemental index. Fay and Middleton showed a detection rate of 55% through use of subjective judgement and Alpert et al. showed that there was hardly any difference in truth and deception when the 100-6000 Hz filter was used but a change in voice amplitude was noted when the 100-250 Hz filter was used. Despite these effects, lie detection by voice analysis has not reached the practical stage. The voice is not only easy to record but it can be collected without the awareness of the subject being monitored. Its potential for lie detection cannot be under estimated and it should not be discounted too lightly. The key issue of voice analysis in lie detection is the method of processing information in voices. At present, a bundle of analysis methods should be studied in order to probe for the better system. The purpose of the experiment given in this report was to explore, along the above mentioned line, the possibility of lie detection by means of voice analysis.

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A human voice is formed by exhalation, utterance and articulation. A sound wave passing through various parts of the vocal system (mouth, throat, lips, etc.) produces words and distinctive resonance.

If a subject is psychologically disturbed or telling a lie, we assume there are changes in exhalation muscle tension of vocal cords and resonance characteristics from the vocal tract to the lips, including the mouth and nasal cavity. Although these characteristics are not sufficiently investigated yet, it is hypothesized that a guilty person's utterance to a critical question is different from his utterance to a control.

Based upon this assumption, detection of deception through analysis of voices in respect to showing the pitch, intensity, duration and the sonagram has been studied and reported here.

Method

Subjects: A pilot study with a mock crime did not produce enough stress during the examination; therefore, materials taken from criminal cases were used for analysis. These materials cover 3 subjects who were confirmed as criminals by confession or by medical jurisprudence examination. The crimes involved were larceny (pick pocket, intrusion) and rape. The subjects were males ranging in age from 24 to 30.

Recorder: A Sony ECM-21 microphone was placed approximately 30cm from the subject's mouths. The voice was transmitted through a unidirectional condenser microphone to a Sony TC-777A tape recorder in the next room. The recording was made at a speed of 19cm/second. The recording sensitivity was adjusted by using a UV meter to monitor subject's voice during the pre-test interview. This sensitivity of each subject was maintained through the examination.

Procedures: The subjects were taken into a semi-sound proof room and were given a pre-test interview. POT and comparison question tests (CQT)* were administered to the subjects in accordance with the standard procedure using a Takei TRP-L polygraph. During the examinations, verbal responses of the subjects were recorded in the next room by a tape recorder.

Instrument processing: When the answers to CQT and POT questions were inconsistent, they were not analyzed; for example, when one answered "no" to a certain question in a series and later said "I do not know." As a result, we selected 21 questions from the 7 charts on subject no.1, 27 questions from the 11 charts of subject no. 2, and 27 questions from the 11 charts of subject no. 3. In all, there were a total of 75 answers to be analyzed for voice pitch, intensity and duration.

*The Comparison Question Test is R/I, rather than a Control Question Test. Hence the initials CQT are not used in this text as they are commonly used in the United States and Canada. [Ed.]

The recorded voices were reproduced by Toshiba GT-710 tape recorder and the output directly connected to a Nippon Electronics PI-3A pitch intensity indicator. The reproduced level was -∞~Cbd which is the sound pressure measuring range of the indicator. Therefore, it was adjusted so that the maximum volume of the subject's voice was about -5db. The reproduction level of each subject's voice was kept constant throughout the analysis time. The pitch indicator was set to measure the changes in the range of 90 - 360 Hertz. The output of pitch intensity indicator was recorded at 100 mm/s on a sheet of Yokokawa EMC-61 electromagnetic oscillograph.

The verbal responses of subject No. 1 were used exclusively in the sonagraph analysis. The materials were limited to those showing conspicuous deception reaction to the relevant questions on the polygraph charts. Finally, voice responses to 15 series of the 5 question lists were used. Voices were reproduced by an Akai 910 tape recorder and put into Kay's sonagraph 662B. The analysis band was set at 0 - 6 kHz and the analysis filter was set at 300 Hz.

Analysis materials: (1) A duration was calculated for each answer based on records of the pitch indicator. That is, the time from 0 Hz before the subject answered and back to 0 Hz after the answer was measured.

(2) A pitch was first analyzed by using the records obtained by the pitch indicator, but the difficulty was in determining what the changes of characteristics in the pitch were products of deception. Therefore, the highest point of the pitch of the subject's answer was picked up and its frequency was measured. The highest point of each answer in each series usually appeared in the same location. For example, in the answer wakarimasen (I do not know) of each series, the highest point of pitch was recorded at "ri" of the answer "wakarimasen", except in an unusual case. When the highest point reached was at "se" in some cases, the measurement was taken at that point.

(3) The intensity was analyzed as in the case of pitch analysis, but because of the unknown criterion for judgement and non-linear recording of intensity on the paper, the analysis was very difficult. The record paper showed 5mm difference between -40db and -35db, but showed 15mm difference between -15db and -10db. In the next method, a graph showing the intensity to each question in 1st series was traced on a paper to superimpose, but no peculiar answering characteristics to a critical question was noted. So, only the maximum intensity points of each answer were extracted and measured.

(4) A sonagram is used in voice identification. The ordinate axis gives the time and the abscissa axis indicates the frequency. The density of pattern inscribed on the graph shows the intensity of the voice frequency component. In the graph, voice duration, formant (phonetic) voice intensity and consonant are displayed, but because of the consolidation of multi-dimentional analysis, a subjective judgement was assigned to specialists. Sonagrams which analyzed the answers of subjects of each series were mounted on a board and we had three specialists on voice identification analyze them. The following instruction was given: "These charts are sonagrams of subjects' answers to questions used in the polygraph test. Questions consisted of 4 or 6 in each series. A chart of each series contains one deceptive answer. Please select one chart which shows peculiarity from others and record the

number of the chart. When a judgement cannot be made, indicate this by writing so."

Results and Discussion

The difference in the pitch, intensity and duration of the voice between deception and truth has not been clear. It is not known whether pitch increases or decreases when a deceptive answer is given. A frequency of the critical question which had either the highest or the lowest pitch in each series question was counted. In an actual examination, an orienting response occurs at the first question of each series. It is not known whether this orienting response occurs in the voice pitch; therefore, after excluding the answer to the first question, a frequency indicating highest or lowest pitch in critical questioning was also counted. The results are as shown in Table 1. Among the 75 series, 10 highest (14.6%) and 13 lowest (17.3%) pitch responses in series were associated with the critical questions. A chance detection rate would be $\frac{1}{2}$ or 50%, but the rate from the results obtained here is lower.

TABLE 1

Number of Series Showing Highest and Lowest Pitch Responses to Critical Question Within the Series

	Total # of Series	Analysis of All Responses		Analysis by Eliminating the 1st Response	
		Series showing highest pitch	Series showing lowest pitch	Series showing highest pitch	Series showing lowest pitch
Four question composition	39	5	8	9	8
Five question composition	30	4	5	6	8*
Six question composition	6	1	0	1	0
Total	75	10	13	16	16

*$p > .20$ bionomial test $(30, \frac{1}{4})$

If the voice pitch increases when a deceptive answer is given, the following can be assumed. Performing "m" series of question lists which consisted of "n" questions, the number of the critical responses indicating the highest pitch in a series would exceed m/n. This also applies when the pitch is lower. For example, assuming that a 4 question chart in 40 series given a

ranking of 1, 2, 3, 4 from the highest pitch in each series, the count is made on the frequency of (1) and (4) during the 40 series. If the pitch decreases during deception, the frequency of (4) should be significantly higher than 10. A bionomial test of results given in Table 1 was conducted. When the first answers were eliminated, the 4 question chart was treated as a 3 question chart, 5 as 4 and 6 as 5. The analysis of 5 question 30 series after eliminating the responses to the first question, showed that the pitch was lower than the chance probability, but was not significant ($n = 30, \frac{1}{4}, p > .2$).

A peculiar reaction does not always occur in the field polygraph test using three indices. It is also presumed that this can be said for the voice analysis. A change in the pitch is small and does not produce a satisfactory result.

The results of the analysis of intensity are as shown in Table 2. By using the binomial test for the 6 question composition, the series showing the maximum intensity to critical question showed a higher frequency which approached significance ($p < .2, 6, 1/6$). There was no sign of increasing or decreasing of voices in intensity during the questioning.

TABLE 2

Number of Series Showing Highest and Lowest Intensity Responses to Critical Question Within the Series

	Total # of Series	Analysis of All Responses		Analysis by Eliminating the 1st Response	
		Number of Highest Intensity	Number of Lowest Intensity	Number of Highest Intensity	Number of Lowest Intensity
Four question composition	39	8	7	11	7
Five question composition	30	4	3	7	3
Six question composition	6	2*	0	2	1
Total	75	14	10	20	11

*$.1 < p < .2$ bionomial test (6, 1/6).

Table 3 shows the results of analysis on the duration of subjects' answers. An analysis of 5 question composition approached significance ($p < .1$, 30, 1/5) and an analysis of 4 and 5 question composition by eliminating the answers to the first question also approached significance

($p < .2$, 39; $p < .2$, 1/3, 30, 1/4). Both showed a tendency of longer duration for answering critical questions but this was not significant. Nevertheless, it showed a higher detection rate than by a pitch or intensity method, but it is still under 50% indicating that it is not applicable in actual cases.

TABLE 3

Number of Longest and Shortest Duration
Responses to Critical Question Within the Series

	Total # of Series	Analysis of All Responses		Analysis by Eliminating the 1st Response	
		Longest Duration	Shortest Duration	Longest Duration	Shortest Duration
Four question composition	39	10	10	16**	12
Five question composition	30	9*	2	10***	2
Six question composition	6	1	0	1	0
Total	75	20	12	27	14

* $p < .1$ bionomial test (30, 1/5)
** $p < .2$ bionomial test (30, 1/3)
*** $p < .2$ bionomial test (30, 1/4)

In the analysis of sonagram for subject A, all 3 voice identification specialists failed to determine the answer to a critical question. Specialist (1) achieved 4/15 (26.6%) as correct decisions; the other two specialists did 2/15 (13.3%) as correct judgements. All three reported that they could not determine the deceptive answers and notable changes. Therefore, the sonagram can be judged as difficult to analyze and not reliable or adaptable for actual cases. From the results of these analyses, using pitch, intensity and duration of voices as a means to detect deception, the utility appears slim at this stage.

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TESTIMONY OF MR. RAYMOND J. WEIR
BEFORE THE UNITED STATES SENATE ETHICS COMMITTEE

May 7, 1979

Introduction

The article which follows is a transcript of testimony before the Senate Select Committee, which was appointed to consider accusations against Senator Herman Talmadge (D) Georgia. Mr. Weir's testimony involved an examination administered by him to Daniel Minchew, who was formerly an administrative assistant to Sen. Talmadge. Mr. Weir's examination, given at the request of Minchew's attorneys, covered only the existence of a secret bank account with the knowledge and consent of the Senator, whether Sen. Talmadge's secretary was aware of this account, and whether any funds from this account were turned over to the Senator. Mr. Weir reported that Mr. Minchew was truthful in answering questions of this limited scope.

The testimony in this case is of importance to the polygraph field, because the testimony was admitted into evidence by the equivalent of stipulation between the opposing counsel. Although the senators were fearful to establish that this should not be considered to be a precedent, in a sense it is a very important precendent for the polygraph field.

As far as can be determined, this is the first time that polygraph testimony was received in evidence by either body of the Congress. Earlier testimony, such as that before the House Government Operations Committee, and the Senate Judiciary Committee were adversary hearings on the validity and reliability of the polygraph and the propriety of its use in the employment process. More recently, the Senate Foreign Intelligence Committee conducted hearings in a more objective atmosphere to consider the value of the polygraph as an adjunct to sensitive security investigations.

It is encouraging to note during this transcript the apparently sincere and intelligent interest displayed by members of the Select Committee. They were willing to discuss the polygraph examination of Minchew from the point of view of the technique involved, the degree of credence which could be placed in the test, and the assistance which might be derived for the committee in discharging its responsibilities. The questioning was not hostile, neither did it display any preconceptions regarding the polygraph. This is a hopeful sign.

We have no way of knowing the part which the polygraph played in the final Senate vote to "condemn" Mr. Talmadge. It is a significant step forward that it was considered at all.

For copies of reprints write to Raymond J. Weir, at 1038 Evarts St., N.E., Washington, D. C. 20018. The author is a Past President of the American Polygraph Association.

Mr. Weir: I do.

Senator Stevenson: Please proceed, counsel.

Let me admonish counsel and the witness to use these mikes.

Senator Morgan?

Senator Morgan: May I for the sake of the record read a brief statement into the record since this is the first time adjudicatory proceedings that I have ever participated in where the polygraph was used. With your permission I would like to read a statement.

Senator Stevenson: Please proceed.

Senator Morgan: Mr. Chairman, I have been informed that counsel on both sides have agreed to make no objection to the admissibility and consideration by this committee of the results of a number of polygraph examinations by several polygraph examiners.

My understanding of the polygraph is that it is an instrument which measures the physical stress of the person being questioned, an indication of physical stress is supposed to show deception or lack of deception as to each question. My study indicates that the polygraph is an invaluable tool in law enforcement investigation and its use in that area is uniformly accepted. On the other hand, the Courts of the United States in most States uniformly reject the results of the polygraph test for the purpose of establishing guilt or innocence of one accused of a crime. The basis for such a ruling is the machine has has yet attained the high degree of scientific acceptance that would ensure in such serious matters of accusation of crime its reliability and accuracy as a means of detecting truth or falsehood.

At this time there is pending in the Senate, S. 1845, in connection with which there were hearings last fall before the Subcommittee on the Constitution of the Committee of the Judiciary. These facts encourage me to approach the acceptance of this somewhat extraordinary presentation in this hearing with an opened and informed mind, in the hope that such evidence will be useful in arriving at the truth based upon all the evidence.

In some States, including my Home State of North Carolina, the courts have allowed the results of polygraph tests if it has been stipulated both either in criminal or civil cases by both sides that they may be used in evidence.

Prosecutors have used polygraphs to exclude innocent persons from being suspects.

The single issue in this case is the accusation that Senator Talmadge had contemporaneous knowledge of certain facts, principally the Riggs Bank account and the over-reimbursements in the expense account. One side says we should believe he did. The other side says there is no basis for such charge.

The question to a substantial degree is based on credibility of a single witness. We must then measure and consequently judge the credibility, the believability of a witness.

Credibility is measured in my opinion by many things, the demeanor of the witness, his good name and his past good character, the reasonableness of his testimony, the inconsistency of what he says in light of other hard evidence or corroborated testimony and the weight of other evidence and testimony contrary to his.

The polygraph appears to be a measuring device. It measures physical reaction, stress in terms of respiration, heart beat. And a highly qualified polygraph examiner who is impartial and experienced is not only, in using the machine, but is experienced in framing the questions, administering thet test under proper circumstances and in interpreting the charts that are produced on the machine may be of help in deciding the matter.

Therefore, Mr. Chairman, I concur in the ruling of the chair, the proposed ruling that on the basis of the stipulation of counsel on both sides that the polygraph evidence may be admissible. I make this statement because I would not want it to be taken to establish a precedent in any further hearings in which I might be a participant.

Senator Stevenson: Thank you, Senator Morgan.

Senator Schmitt: Mr. Chairman, I think that is an excellent statement by the Senator from North Carolina. I would only add to that, again, the qualification that we are still in an investigative phase.

Although I do not think the polygraph should be -- our situation here should be viewed as a precedent, I do think it is important, since it has been raised, not only publicly but by both counsel, it is important that the Committee understand the possibility that it is evidence, that we should consider in making our final judgment. I think it is going to be one of the more interesting aspects of this hearing.

Senator Stevenson: Thank you, sir.

Mr. McCullough?

Mr. McCullough: Thank you, Mr. Chairman.

Mr. Weir, will you state your full name and spell your last name for the record, please?

Mr. Weir: My name is Raymond John Weir, Jr., W-e-i-r.

What is your present profession, sir?

Mr. Weir: I operate Weir Polygraph Service which administers polygraph examinations and I serve as a consultant on the polygraph for people who are interested in it.

Mr. McCullough: As a private polygraph examiner, do you do work for attorneys?

Mr. Weir: My work is done primarily for attorneys.

Mr. McCullough: Do you do employment screening for employers?

Mr. Weir: I do not do employment screening.

Mr. McCullough: Do you consult police departments or law enforcement agencies?

Mr. Weir: Yes, sir. I have consulted with police departments and law enforcement agencies.

How long have you been operating your private service?

Mr. Weir: Since February 1976 when I retired from the Federal Government.

Mr. McCullough: What was your last position held with the Federal Government?

Mr. Weir: My last position was as Chief of Security Operations with the National Security Agency.

How long were you employed by the National Security Agency?

Mr. Weir: I was employed by them from 1951 until 1976, about 25 years.

Mr. McCullough: While you were with them, were you in polygraph examinations?

Mr. Weir: Yes, sir, I was.

Mr. McCullough: Can you tell the Committee first of all your educational background?

Mr. Weir: I have a bachelor's degree from what is now the District of Columbia Teachers' College, and have done graduate work at Howard University and American University. I do not have a graduate degree.

Mr. McCullough: When and where did you receive your additional polygraph training?

Mr. Weir: At Keeler Polygraph Institute in Chicago, in 1951.

Mr. McCullough: Have you had subsequent training since that time?

Mr. Weir: Since that time, I suppose, my training has been almost continuous. There is very little done in the way of polygraph except within the profession. There are annual seminars conducted by most state associations, regional associations, the American Polygraph Association, and others of special interest. I have attended at least one of those every year since 1952.

Mr. McCullough: While you werw with NSA, is there a training level that you passed through as you continue your employment with the Federal Agency?

Mr. Weir: I think it would parallel most other operations of that sort. It is considered to be a very technical and a very highly skilled operation.

The person before he is sent for polygraph training as of the standards when I retired, must have had at that time a college degree and at least five years of Federal investigative experience. With that sort of background the person went to polygraph training school which was at that time six weeks. It is now eight to 14 weeks depending on the school.

Returning from this basic training, the person entered a period of internship for an interim of six months during which time he was under complete observation for the entire period. During this time he might conduct 100, 150 polygraph examinations.

Completing his internship he entered into the journeyman stage after he was a junior examiner from about 250 to approximately 750 examinations. After he completed that he became a journeyman examiner. He was not considered an expert until he had had at least two years of

full-time experience with perhaps 1,000 to 15-hundred cases that he had conducted.

Mr. McCullough: While you were at NSA and you said you were last in the position of Chief of Security Operations, did you have to review -- did you have quality control there?

Mr. Weir: Yes, sir. Every polygraph examination that was conducted was reviewed by at least one and sometimes more than one superior. My job as Chief of Security Operations involved both investigations and the polygraph so that even in this position I was the agency expert, I suppose you might say, in regard to the polygraph operation.

But each case that was conducted was reviewed by a superior.

Mr. McCullough: Could you give the Committee an estimate of the number of examinations that you have either conducted or reviewed?

Mr. Weir: I have conducted somewhere in excess of 5,000 examinations. And I've probably supervised the administration of 50,000 more.

Mr. McCullough: What are the issues that you have to resolve at NSA in a general fashion, without disclosing anything that would be classified?

Mr. Weir: The polygraph is used there, as I suppose in some other agencies, with similar problems. First of all, to screen incoming applicants for employment to make sure they meet the standards, at least to assist in determining whether they meet the standards for a clearance level or for employment in a highly sensitive operation. It is also used as an aid in investigations to resolve serious allegations against the employees who are involved with very sensitive operations.

Mr. McCullough: While you have been an examiner, have you also maintained a professional status in any organizations or associations of polygraph examiners?

Mr. Weir: Yes, sir. I have. From about 1952 on I have been a member of whatever professional organizations were in existence, and I was among those who organized with John Reid in Chicago, the American Academy of Polygraph Examiners in the 1950s. Then about 1966 predecessor organizations were merged to join the American Polygraph Association.

I am a Past President and a life member of the American Polygraph Association.

Mr. McCullough: Does the American Polygraph Association set some recognized uniform standards for examiners in this field?

Mr. Weir: Yes, sir. It does, set standards for admission to the field, in regard to education, the current standards require a college degree. They set the minimum standards for training in various technical schools.

They have a school accreditation committee that inspects and approves these schools. They administer both the polygraph examination and a written examination and oral examination to candidates for full membership in the association. It stands as perhaps the equivalent for its field that the bar association or medical association would have for people in those fields.

Mr. McCullough: Have you written articles for professional journals about your experiences in polygraph examinations?

Mr. Weir: Yes, sir, I have. I am the author of several articles that have been published in Polygraph magazine which is the journal of the APA, the American Polygraph Association. I have written concerning relevant-irrelevant type testing examinations which I used.

I have lectured widely at various schools and seminars. I have done, at least, what I think is the responsibility of almost any examiner, to try to broaden the field of knowledge about this particular profession.

Mr. McCullough: Have you testified in court as an expert witness before?

Mr. Weir: Yes, sir. I have testified in court on several occasions.

It is not as frequent, of course, since this has only taken place since I went into commercial work. But a year or so ago, I testified in the State of Louisiana, to lay a foundation for the Admissibility of Polygraph Evidence.

It was not admitted by the way. But I also testified as an expert witness in Santa Fe, New Mexico and one or two other locations.

Mr. McCullough: Have you testified before congressional committees?

Mr. Weir: Yes, sir. I testified in closed session before the House Committee on Government Operations in 1963-64 hearings concerning the Federal use of the polygraph.

Mr. McCullough: Mr. Chairman, at this time, I move that Mr. Weir be recognized as an expert in his field, subject to any voir-dire Mr. Hamilton might have about his expertise.

Mr. Hamilton: Could I ask a couple of questions?

Mr. Weir, the type of examination that you administer is referred to as the relevant-irrelevant question technique, is that correct?

Mr. Weir: That is correct.

Mr. Hamilton: There is another technique called the control question technique, is that correct?

Mr. Weir: That is correct.

Mr. Hamilton: You are not an expert, I believe, in the control question technique, is that correct?

Mr. Weir: That is correct.

Mr. Hamilton: You are only an expert in the relevant-irrelevant technique?

Mr. Weir: I am acquainted with the control question technique, I have studied it. I do not myself use it. I do not consider myself to be an expert in it.

Mr. Hamilton: No further questions.

I will certainly stipulate that Mr. Weir is an expert in the relevant-irrelevant technique of polygraph examinations.

Senator Stevenson: Is that responsive to your motion? Is that the issue?

Mr. McCullough: Yes, sir.

Senator Stevenson: Senator Schmitt?

Senator Schmitt: Mr. Weir, could you comment briefly on the general kinds of evidence cited by yourself and others to substantiate the accuracy of polygraph examinations and, in particular, the area where you are expert in?

Mr. Weir: The evidence is very very difficult to gather. There has never been a definitive study of the polygraph in the field situation, in order to determine its absolute accuracy or validity or reliability.

The problem here is that you do not have a controlled situation where you have full control of your experiment. In the laboratory situation where they can set up an artificial crime, they know which one did it because one of the students who participates in the experiment -- it is very simple, and they know what ground truth this is. In the real life situation you do not know what ground truth this is unless you are running criminal cases and someone else confesses when someone else has committed a crime. By implication the person you tested is known to be innocent. In that type of situation -- and the statistics here are problematic because again you do not have full ground truth, the polygraph achieves an accuracy of somewhere in excess of 90 percent. Exactly where, I don't think anyone knows.

I don't know if that is responsive to your question.

Senator Schmitt: You said 90 percent?

Mr. Weir: Somewhere in excess of 90 percent.

Martin Orne who is considered to be an expert on the polygraph, in the laboratory situation at least, testified in the case of Zeiger versus United States in Washington. In the laboratory they achieved an accuracy in the lab experiments in the high 80 percents. He fully expected in the live situation in the field he would exceed this accuracy.

Senator Schmitt: Would you define for the Committee the expression ground truth?

Mr. Weir: It is an experiment where you control all the variables. You are absolutely in control of it.

The general way of setting up such an experiment would be a psychologist would put a sum of money in a desk drawer. He would have a student come in and take the money from the drawer. He would also have another student observe this but not actually touch the money. So now you have a person who did the alleged crime. You have someone who has guilty knowledge of it. Then they would have a third person who had nothing whatever to do with it.

In the laboratory experiment they would give a polygraph test for all three. The examiner is supposed to determine accurately who took the money, who knew about it but didn't take it and who was completely innocent of the whole thing.

Here they are controlling all the variables. This is what I mean by ground truth.

A person walks into your laboratory in real life and you are doing an applicant screening application, you can't possibly know all the facts. So the fact that a man does not react and you say he is innocent does not prove definitely that this is indeed the case because you don't know him. You have no way of investigating it.

Senator Schmitt: Has experimental work in this area ever been done with identical twins?

Mr. Weir: Not to my knowledge, sir. I am not aware of any such experiment.

Senator Schmitt: Do you know of any recent advancements in polygraph techniques in the area you are expert in that have generally been accepted as improving the accuracy of such examinations — technological developments or examination techniques?

Mr. Weir: The only experiments I know are those that took place in the college laboratories. They have been continuing. They still go on.

Senator Schmitt: But is the field use of the polygraph such as will be testified to here today, and tomorrow, has that field use generally stayed about the same for the last several years or a decade or so?

Mr. Weir: There have been tremendous improvements in instrumentation.

Senator Schmitt: Sensitivity?

Mr. Weir: The sensitivity of instruments, the reliability, their ability to duplicate charts.

You get also -- both the Federal and the military have gone in for central quality control. So we have much better trained examiners, much better supervision of examiners taking place.

Many of the commercial men in the field are themselves military retirees or Federal retirees or former police officers so you have much better trained examiners working now than you did when I first went into the field. Many of the things we learned the hard way -- by the seat of our pants, really -- in the early 1950s, are now being taught so that the student enters the field with a much better understanding of what he is doing and how he goes about it, then what was originally true.

Senator Schmitt: Is a variety of new technical techniques being applied or is it a purely visual science?

Mr. Weir: You can do it both ways. I know of studies conducted on computer analysis of charts by the Federal Government. They would take the charts and feed it into an instrument which would compare in its memory all it had concerning what was or was not a reaction on a test.

They found as the basis for most of the experiments though, the computer wasn't doing it any better than the examiner did at far greater expense.

Senator Schmitt: Are you familiar with the techniques of amplitude enhancement as applied to other types of data that resembles polygraph data?

Mr. Weir: I have read about it. I don't know that it has been applied to polygraph at all.

Senator Schmitt: Thank you.

Senator Stevenson: Senator Hatfield?

Mr. Weir, as I understand, there are basically two methods in your profession of testing the relevant-irrelevant question and the control question?

Mr. Weir: These are the two primary techniques.

Senator Hatfield: Would you contrast those two methods for the Committee and why you chose to become an expert in the one you did, over and against the other method?

Mr. Weir: Yes, sir.

The relevant-irrelevant technique I used was the one that was the first developed in the field. It was developed by Leonard Keeler, considered by most of us to be the father of polygraph testing. It consists of a variable series of questions. We have three types of questions mixed into the series.

One is a relevant question. By relevant I mean it pertains directly to the issue under examination.

The second general type would be an irrelevant question that has nothing to do with the issue under examination, would presumably be neutral, carry no emotional impact at all.

The third type of question we use we call a control. It is intended to stir up a reaction to make sure the person does react within the limits of your instrument to record.

This particular type of test consists of a series of these relevant questions with irrelevants interspersed. The questions are repeated several times during the examintion.

These examinations consist of two or more individual charts of about five minutes in length, four to five minutes. At the end of that time the examiner studies the chart to determine whether there were reactions that occurred as he asked the questions. But the reactions must present to him several characteristics. They must be consistent. They must occur, in other words, every time a question or a cognate of it is asked. It must be specific. It must occur at the exact moment on the chart when that question was asked of the person.

The third is they must be significant. They must be larger than the general background noise level of gentle changes of patterns that occur with everyone, would occur really if there were no questions being asked.

This is the relevant-irrelevant test.

The second type of examination, the control question technique is the one used probably most widely today. It consists of a fixed sequence of questions. In it they have the essentials of it. You would have a relevant question pertaining to the matter under investigation if it was a criminal matter. Compared with the relevant-irrelevant question you have the control question. The control question is made up of something that has some similarity to the crime you are investigating but would be of much lesser significance, would be separated from it in time and further, would be something that most of us would

have done. So that if the question is going to be concerning, say, a robbery of several thousand dollars, the control question for that might be, between the ages of 15 and 18, did you take anything whatever that didn't belong to you?

The theory here is one of psychological set, that the innocent person who did not conduct the major robbery but is concerned because between 15 and 18 he did indeed take some things that didn't belong to him is going to be far more disturbed by the control question than he would be the relevant question. He didn't do the relevant question. He did the control question. The guilty person on the other hand is going to be more disturbed by the control question. This represents the more immediate threat to him. As a result, he will react more strongly to the relevant question.

The analysis of these charts consists of determining the degree to which the person responded to each of those two questions, the relevant and to the control. If he responds a great deal more to the control question than to the relevant he is innocent. If he responds a great deal more to the relevant than to the control, he is considered guilty. If they are very close together so that you cannot make a very distinct judgment between the two, the test is inconclusive. This test has the advantage of being fairly short. It consists of about 10 questions. They repeat those at least twice, two charts. It is very easy to learn because you have that fixed sequence. If you were a young examiner just our of school, it gives you a very comforting way to operate.

Senator Hatfield: Is there any qualitative analysis on the two methods that have been made?

Mr. Weir: As far as I know, there haven't been any good studies made comparing the two. Most of us in the field consider the relevant-irrelevant technique I use to be somewhat more advanced, to be somewhat more complex, and to require a little bit more in the way of experience for the examiner. You will get a violent disagreement on that statement from the field, however.

Senator Hatfield: Thank you.

Senator Stevenson: Senator Burdick?

Senator Burdick: I understand that the court decisions are deeply divided on this question of admissibility, is that correct?

Mr. Weir: That is correct, sir. There are one or two jurisdictions which will admit polygraph evidence over objection by opposing counsel. It must have been stipulated in the first place. There are very few I think that freely admit this without any problems at all.

Senator Burdick: Do those that admit the evidence, do they admit it under the limitations you described?

Mr. Weir: Sir, I am not sure. I think that it is mostly by stipulation. If both attorneys have agreed to be bound by an examination, then the courts have upheld it will be admitted, whether or not it is against the interests of the defendant in the case. But there are very few jurisdictions which freely admit it without any laying of groundwork or any proof that it should be admitted.

Senator Burdick: You just testified that it was about 90 percent accurate. I wondered if these decisions were admitted on the same ground?

Mr. Weir: I don't know. In the polygraph field we have been wondering why it is the courts are so reluctant to admit this when they do admit other forensic evidence that is nowhere near as accurate as the polygraph. But I guess it goes to the matter of whether the man is guilty or not and this is one of the reasons.

Senator Burdick: I have some misgivings about this type of evidence but as long as Counsel have stipuated, I presume we can proceed.

Senator Schmitt: You mentioned other types of forensic evidence that is less accurate than a polygraph. Could you give the committee some feeling for that?

Mr. Weir: I was thinking, immediately, for example, psychiatric testimony where you will find two very renowned psychiatrists who will be testifying 180 degrees out of phase. Other things can be notoriously unreliable, something like some phases of medical evidence. I don't think anybody knows the exact accuracy of an electrocardiograph, that sort of thing.

Senator Schmitt: But on the other side, of evidence more accurate, would you include ballistics information, fingerprint information?

Mr. Weir: I am not sure. I don't think I am competent to make a comment on that.

Senator Schmitt: Thank you.

Senator Stevenson: The motion of Counsel is agreed to on the stipulated terms with respect to the witness' expertise.

Mr. McCullough: Thank you, Mr. Chairman.

Mr. Weir, I know that you have already testified a little bit in response to some of the questions of the Senators, as to explaining the psychological and physiological basis that underlies the use of the polygraph. But could you amplify on this a little bit? You mentioned psychological set. They have talked about physical stress. Could you be a little more technical for us?

Mr. Weir: The psychological foundation of the polygraph really is just one emotion, it works on fear. It works on the fear of detection. We have built into our bodies a nervous system which takes care of what should be the automatic functions of your body. It takes care of your breathing, your heart rate, pulse beat, your digestion, perspiration. It is called the autonomic nervous system. One branch of this is the one built in to take care of our bodies in emergencies. I suppose back in the old days when you went out of your cave and you saw a large yellow animal you had to know whether to run or fight. It is this fight or flight thing that is done here. When your body is faced with an emergency, it organizes itself to take care of the situation. It stops the functions of your body which are not essential to survivorship. Your digestion and salivation stop. It sends enriched blood to your muscles to prepare you for emergency action, this sort of thing. These are reflex actions. They are not under your voluntary control. The whole theory of the polygraph is if a person is faced with a

situation that is meaningful to him that is a threat to his well being, beyond his control, his body will begin to prepare him for this emergency situation.

In the polygraph instrument we record three phases of the various things that are going on. We record the person's breathing, respiration with modern instruments recorded by a rubber tube placed across the chest. Most use two, one on the upper chest, one on the lower chest, so wherever a person happens to breathe they will get a good pattern of their respiration. The second contact are two electrical contacts that are placed on the fingertips that record sweat gland activity. This is known as the galvanic skin reflex. The third is a regular doctor's blood pressure cuff, placed on the upper arm or forearm. It records your pulse rate and change in mean blood pressure. All three of the things we are recording, breathing, galvanic skin reflex, the cardiosphygmograph, the blood pressure and pulse, for the polygraphic examiner, they are convenient to get at. It is not the sort of thing where you would require a doctor or nurse in attendance in order to make recordings of them.

So the polygraph works because we ask these questions as the test is going on. The person is attached to the instrument and his breathing is being recorded. His galvanic reflex is being recorded; his blood pressure is being recorded. We tell him in advance what questions we are going to ask him so he will know precisely what he is going to be asked during the test. If any of those questions represents a threat to him, he cannot prevent the reactions from occurring on the charts. So this is the full purpose of it, that if it is a meaningful situation, the test will work.

Mr. McCullough: On this line of a meaningful situation, have you heard of the friendly examiner syndrome?

Mr. Weir: Yes. Dr. Martin Orne, who has done a great deal of laboratory study concerning the polygraph, hypothesized that if the examiner was a friend of the subject, that is, he was hired by defense counsel and the man knew the examination was not going to be admitted into evidence and it would be covered by attorney privilege, under those circumstances you would not get the threat to the well being established. I can say here only Dr. Orne is a theoretician. He is an armchair scientist who is not himself a polygraph examiner.

In the field we do work both ways. I would work for a prosecutor or work for defense counsel. Some commercial examiners do a great deal of work this way. Reviewing their files and going back and studying cases they find there is no difference between the examination conducted for defense counsel, the examination conducted for a prosecutor if that was the case. They find that Dr. Orne himself in some of his preliminary work got very poor results because he hadn't paid attention to the business of providing the proper stimulation for the person taking the examination. But he found if he merely said such a thing to a student, "Well, only a very stupid man could ever by caught by a polygraph, and if you lie and the examiner catches you that definitely proves you must be stupid." They got that much ego involved in the test, his results improved tremendously just from that degree of preparation.

Mr. McCullough: If I understand the hypothesis, if it contains any validity it is when you go to a defense hired examiner and the results are likely to be buried in defense counsel's files if you flunk it, you can be so relaxed that you will not react deceptively to the questions posed by the friendly examiner? Is that basically the hypothesis?

Mr. Weir: Yes. We find it just does not exist. You will expect if a person is perfectly relaxed and has nothing to worry about, you have no problems with nervous tension during examination. I know giving tests for defense attorneys I have had cases where the person came in and the general nervous tension was very difficult to keep under control because the man definitely felt he had something to lose. If he does not lose anything else, he loses his own opinion of himself. He is also afraid his attorney will lose respect of him. All of these things are brought up to the person in the pretest interview. I would, for example, say to a person, as I said in this particular case, that even though I am working for your attorney you must be sure of one thing, that I am going to find out whether you have been truthful to these questions I am asking. I have no difficulty with the friendly examiner syndrome.

Mr. McCullough: The person also would lose, would he not, the opportunity to prove his innocence to a skeptical investigative agency, isn't that correct?

Mr. Weir: That would be very true. Most of us would say to persons when we are testing them, and I think it is true, though I am certainly a layman as far as law is concerned, that the worst thing a person can do is to lie to his own attorney. An attorney will have me give a test because they don't know if his client is telling the truth. That has a great deal to do with his defense.

Mr. McCullough: If a subject knew that a newspaper was aware that a test was being given and would either likely be given the results of the test or that the newspaper would publish the fact that he had agreed to take a test and failed to provide the test results to the newspaper, ostensibly because he had flunked the test, would that give him the something to lose that would have him reacting properly and negate the hypothesis?

Mr. Weir: In the situation you present, I am certain that if a person knew the test results were going to be published that would give him a very definite stake in the outcome of the test and would prevent the friendly syndrome if it does exist from taking place.

Mr. McCullough: On the day you gave Mr. Minchew the test in question, were there reporters from the Atlanta Constitution present at the lawyer's office?

Mr. Weir: There were two gentlemen in the waiting room when I came in, waiting for Mr. Fierer and Mr. Stiller, the attorneys to come in. I was told by them afterwards that these gentlemen were reporters. I did not meet them, nor were they present when the examination was conducted.

Mr. McCullough: Were you told one of their names?

Mr. Weir: I was told one of the names was Kanter, I believe, although I am not sure.

Mr. McCullough: Would you look over your left shoulder and see if you see that gentleman here?

Mr. Weir: I am not sure. It was just a glance. I am not sure I would recognize him. Perhaps the gentleman here with the white hair.

Mr. McCullough: Let the record reflect he has identified Seth Kanter.

Senator Morgan: Which one is he?

Mr. McCullough: Mr. Kanter, would you raise your hand, please?

Now I would like to turn to the test of April the 4th, 1979. You have a report that you issued that is dated that day. It contains some information where you have stated that the subject was examined at the request of his attorneys, Stuart Stiller and Robert Fierer, in order to verify his statements concerning the operation of the controversial bank account. Prior to testing on this date the examiner was briefed on the salient aspects of the case. The subject states the bank account was established at the Riggs National Bank under the name of Senator Talmadge and the Talmadge Campaign Fund. It goes on to detail some details.

How did you obtain those details from the attorney?

Mr. Weir: Those details were obtained from Mr. Fierer in briefing prior to the test.

Mr. McCullough: Had you read any newspaper accounts of this case as well?

Mr. Weir: Yes. I have read of the case in the newspapers.

Mr. McCullough: Did you go to the attorneys to offer your services?

Mr. Weir: No, sir. They contacted me.

Mr. McCullough: When did they first contact you?

Mr. Weir: The exact date I am not sure of. The exact date of the test was April 4. It would have been two or three days prior to that.

Mr. McCullough: Did Mr. Fierer state to you what the subject of your test was to be?

Mr. Weir: Yes, sir, he did.

Mr. McCullough: What subjects were you testing for?

Mr. Weir: He stated he wanted his client examined on two phases of this particular case. One was whether or not he did indeed give to Senator Talmadge the sums of money at various locations. The second one was whether anyone in Mr. Talmadge's office, specifically mentioned to me, Mrs. Tisdale, was aware of the circumstances or cooperated at any time in this business of procuring money.

Mr. McCullough: Did Mr. Fierer frame the questions or did you frame the questions?

Mr. Weir: This was a cooperative enterprise. He told me the questions that he would like to ask. He started off with several. We worked on them and got them to the point of the questions listed in my report.

Mr. McCullough: Could you tell the committee some of the principles of question formulation that are important for giving a good polygraph examination?

Mr. Weir: Yes, sir. A polygraph question to work well must present the person taking the test with a very clear cut decision between a yes or a no. It must be an absolute dichotomy with no gray area in between the yes or no. It should be concerning something factual, an event which did or did not take place. Questions concerning opinions, that sort of thing, do not lend themselves well to polygraph testing. The questions should be as simple as possible. It should be as direct as possible. Hopefully it should cover only one thing so if something goes wrong you would know precisely what was causing the reactions on the questions. So the questions you see here in this report are the questions we arrived at after rather considerable discussion.

Mr. McCullough: You mentioned extraneous factors. Does the condition of the test have anything to do with these extraneous factors, the condition of the room, the quietness?

Mr. Weir: Yes. Ideally it would be something that was almost soundproof so the only stimulus the person received during the test would be the sound of the examiner's voice as he asked the questions. We have all trained ourselves to ask questions all within the same monotone without any inflection at all so whatever the reaction the person has to your voice it will be the same throughout the test. In this particular situation we used a conference room in Mr. Stiller's office. Outside the door there was an automatic typewriter and I had to ask them to turn the typewriter off and no one could have a conversation outside the door so we didn't have any noise.

In my judgment, the room was perfectly adequate for polygraph testing.

Mr. McCullough: How is the subject placed to the machine?

Mr. Weir: During the pretest interview, prior to actually placing the attachments on him, the examiner and the subject sat fact to face across the table. During the actual test I placed the attachments on him and turned the chair so he was not watching the chart, had nothing visual to give him any stimulus except the questions on the tests themselves.

Mr. McCullough: During the course of the test did you find any indication Mr. Minchew was in any way trying to beat the machine?

Mr. Weir: No, sir, I did not.

Mr. McCullough: I would like you to turn to the test itself and your charts. This is Exhibit 85, I believe, in the members' exhibit books. You have your charts and tests with you.

Mr. McCullough: Mr. Weir, looking at your chart, will you explain to the committee what the four wiggly lines on the chart represent?

Mr. Weir: Beginning at the top of the chart, identified by the printed words at the top, the top two patterns are respiration patterns. The top one is by a tube placed around the upper chest. We would call this the upper pneumograph pattern. The second of the two patterns is the lower pneumograph pattern, recorded from a tube placed around generally the area of the abdomen.

The third pattern down, rather faint, is the galvanic skin reflex. We call it a GSR pattern. The final one is the cardiosphygmograph pattern. This is the pulse rate and blood pressure at the bottom of the chart.

Mr. McCullough: Down at the bottom of the chart, I see the letter X. Is that the beginning of the test?

Mr. Weir: At the position marked by the letter X on the chart, this is the point where I said, I am now ready to begin the test.

Mr. McCullough: Double X at the end is the ending of the test?

Mr. Weir: Double X is please sit quietly for a moment until I remove the attachments.

Mr. McCullough: I notice various particular marks down at the bottom in either letters or symbols or numbers. Can you explain to the committee what that represents?

Mr. Weir: The two little vertical lines are generally fairly close together, we call stimulus marks.

Senator Morgan: Would you go a little more slowly or speak a little more distinctly? I can't understand you.

Mr. Weir: The two vertical marks at the bottom of the chart are each followed by a letter or by a number we call stimulus marks. The first one marks a point where I open my mouth to begin asking a question and the second one where I finished asking the question. Then behind that, you will see a letter or a number which identifies a question for me. Underneath that generally, a plus or a minus indicating the person answered the question yes or answered it no. At the beginning of what we call test No. 1, you will see M-1, that stands for Minchew, Chart 1, so I won't get it mixed up.

Below that, you will see a circle with a 90 in it. This indicates that the pressure used in the cardio section there was 90 millimeters of mercury. Then the X mark is where the tests begins. Question A, "Is your first name Daniel?" Where you see the first mark, I would say, "Is your first name Daniel?" At that point, I would have made the second mark. He said yes. At that point, I put the plus mark. As you go along the chart, this is what is occurring. C is, "Is your last name Minchew?" He answered yes to that question. Following that, you see the stimulus marks. This is the first of the relevant questions. This was, "In late 1974, after you left his staff, did you hand cash over from the secret Riggs account to Senator Talmadge in the lobby of the Embassy Row Hotel?" It took me eight seconds to ask that question. He answered it yes.

Mr. McCullough: Do you see any response in one of the lines?

Mr. Weir: If you will look very carefully at that particular question, you will see that nothing occurs of any significance whatever in either of the two breathing patterns. Down below the GSR pattern -- I might explain here that that particular pen is a little longer than the others. It is actually five seconds longer. It extends down. It has the freedom of the entire chart. It can move above the other pens that are making records.

You will see the first little lumps there, it really begins just above the letter C. That actually is occurring to question 1. The GSR shows what would be considered a gentle change at that particular point. In the cardio section down below, if you note that very carefully, it begins to rise a little. The whole pattern begins to rise at that particular point.

This would indicate to me that really the man is alive as far as the test goes. It would not be considered a strong reaction by any means. But what it does show is that he is alert. He is perceiving the question. We consider, generally, for example, that the first pertinent question on the test is almost always going to create some response on the part of the person taking the test.

We will vary that in succeeding charts so we don't get the same question first every time.

Continuing along the line to where the next question is asked is question 2, which would be, "Did you and Mrs. Tisdale at any time work together in converting campaign funds to cash for Senator Talmadge's personal use?"

You will note he answered this question yes. In general, I don't know whether it is of value to continue going along all the way down here. But actually, there is nothing that happens on this first chart that would be of significance as far as any indications of deception are concerned.

Mr. McCullough: In the interest of saving time, let's just move through the charts. You can indicate the relevant questions, three, four, five and six, on the other charts, and explain if there is anything that caused you to -- did you have any difficulty in reading these reactions?

Mr. Weir: It you will look on chart 1, question 6 showed me a minor response in the cardio, the first time it was asked. Do you see a little lump just below the line?

Mr. McCullough: Would you read question 6?

Mr. Weir: "Did Senator Talmadge ever refuse to accept the cash you provided him?" He answers this question no.

At the end of this first chart, thinking now again of the analysis of the charts, the reactions must be specific, they must be consistent and they must be significant. I am looking only now for question 6 because I have seen nothing in this and I want to be sure about that question 6.

If he is not telling the truth, he is going to react to that every time I ask it. If he has thought of something else or has created some minor response or maybe got a twinge or a burp or something like that or his nose tickled and he wanted to scratch it, but I told him to sit still, any of those externals could cause that to happen once during a test, but we could not expect it to occur every time.

A reaction must be defined as something that takes place every single time you ask one question that doesn't occur in the others. On chart 2, I put question 6 again on here. Again, I get a GSR response, a minor reaction here in his cardio.

But going further along the chart, three questions before the end, you see I put in question 6 again. That one shows me no response at all. He doesn't give me the cardio response. He does not give me the GSR reaction to question 6. So that now I have an indication that although I did see something once or twice, what I am seeing is not consistent at all. But this is the reason why I ran chart 3. If it had

not been for that unexplained response, that minor response to question 6, I would have stopped at the end of two charts. But in order to be very sure about this, I ran chart 3.

In the third one, identified as Daniel Minchew Test 3, I again put question 6 in the center of that chart. Again, there is no reaction to it.

At this particular point, I know that I am not getting any consistent reactions to the question. But I have to find out one more thing; is this man capable of reacting? You read, for example, of people taking tranquilizing drugs or depressants and beating a polygraph test. To make sure this is not happening in this case, I must at least at one point during my questioning ask a question that is almost guaranteed to make anyone react because again it will bee the control question.

At the end of that chart, you see the initials "V.I.Q." I said, "Mr. Minchew, I am going to ask you a very important question. And I want you to stop and think about your answer to this one." He hasn't been prepared for this. This is outside of the questions that I had briefed him on in advance. I said, "At any time during the last six months, can you recall having told a deliberate lie?"

Well, what kind of a question is this? You see, unless I explain to him, what does he mean, a big one or a little one, what is going on? Is it what I told my wife to explain why I came in late or what? Not knowing this or my not being helpful means I am faced with a difficult situation. He answers yes. But in the meantime, he gives me a strong reaction both in his cardio and the GSR, the biggest one in the whole test. If you look up above in the breathing, his breathing shifts off the base line it had been occupying all the time. His ability to react strongly just by asking has he told a lie is a shift from my prior test.

He could have reacted to any of the others if they had disturbed him that much.

Now I am at the point of being able to say there are no consistent, significant, specific reactions. The man in my judgment is telling the truth to these particular questions. I must emphasize my statement is only in regard to the questions regarding this examination.

Mr. McCullough: Mr. Weir, when is a competent polygraph expert or examiner ready to render his official opinion?

Mr. Weir: He cannot possibly render it until he has conducted analyses of the charts to see whether or not there are any reactions to the relevant questions. This might not take long. I would consider these to be very clean charts. I was ready and did at the end of the examination tell both Mr. Minchew and his attorneys in my presence there that in my judgment, he had answered these questions truthfully.

Mr. McCullough: Have you heard the term flat charts?

Mr. Weir: Oh, yes.

Mr. McCullough: What does the term flat charts mean to a polygraph examiner?

Mr. Weir: An examiner knows he has an inconclusive test if the man doesn't

react at all in any of the parameters you are recording; you have no way of knowing if he could have if something had gone wrong. In this case, these were not flat charts.

Mr. McCullough: Because he was reacting?

Mr. Weir: He was reacting.

Mr. McCullough: I would like to read each one of the relevant questions you asked and the answer Mr. Minchew gave and ask for you to state formally for the record whether in your opinion he was being truthful.

Question 1 was, "In late 1974, after you left his staff, did you hand over cash from the secret Riggs account to Senator Talmadge in the lobby of the Embassy Row Hotel?" Mr. Minchew's answer was yes.

Mr. Weir: In my judgment, he was truthful.

Mr. McCullough: Question 2, "Did you and Mrs. Tisdale at any time work together in converting campaign funds to cash for Senator Talmadge's personal use?" His answer was yes.

Mr. Weir: In my judgment, he was truthful.

Mr. McCullough: Question 3, "Did you ever supply cash from the secret Riggs account to Senator Talmadge in his Senate office?" His answer was yes.

Mr. Weir: I believe he was truthful.

Mr. McCullough: Question 4, "Other than five or ten dollar contributions, did any staff member other than yourself know of cash contributions made directly to Senator Talmadge, some of which were not reported?" And his answer was yes.

Mr. Weir: In my judgment, he was truthful.

Mr. McCullough: Question 5, "Did anyone else on Senator Talmadge's staff ever aid in converting campaign funds to cash for Senator Talmadge's personal use?" His answer was yes.

Mr. Weir: In my judgment, he was truthful.

Mr. McCullough: Question 6, "Did Senator Talmadge ever refuse to accept the cash you provided him?" The answer was no.

Mr. Weir: In my judgment, he was truthful.

Mr. McCullough: Cross-examine.

Senator Stevenson: Mr. Hamilton?

Mr. Hamilton: Mr. Weir, returning to the question that I asked you when we were discussing your qualifications, your type of examination is the relevant-irrelevant type of examination, is that correct?

Mr. Weir: That is correct.

Mr. Hamilton: This is different from the control question technique that is used by the FBI under normal circumstances, is that correct?

Mr. Weir: I can't comment precisely on the FBI's examination. It would be my judgment, knowing the current director of the program, they would use both as seemed appropriate.

Mr. Hamilton: Let me ask you this question: Would you agree that the control question technology is a valid technique?

Mr. Weir: Oh, yes.

Mr. Hamilton: In fact, isn't it used by the majority of polygraph examiners?

Mr. Weir: Yes.

Mr. Hamilton: Isn't it taught by most polygraph schools?

Mr. Weir: "Most" troubles me but I will agree it is taught, yes.

(1:15 p.m.)

Mr. Hamilton: Would you also agree that the control question technique is very useful in examining one specific area of inquiry?

Mr. Weir: It would probably be its greatest strength.

Mr. Hamilton: So it is good for use in the criminal field, is that correct?

Mr. Weir: That is correct.

Mr. Hamilton: I believe you testified that you do not use the control question technique and you don't consider yourself an expert in it.

Mr. Weir: Correct.

Mr. Hamilton: Is that the reason that when, on April 27, in my office, when I asked you to review the charts prepared by Mr. James Minchew of the FBI of Mr. Minchew that you refused to review those charts?

Mr. Weir: That would be among the reasons.

Mr. Hamilton: I think you also said that the relevant-irrelevant technique is very useful in employee screening where there are a number of issues involved.

Mr. Weir: It would be true in any case where there are a number of issues involved.

Mr. Hamilton: Is it not true that much of your experience has been in employee screening?

Mr. Weir: Yes.

Mr. Hamilton: I would like to turn to the preparation of the questions for Mr. Minchew. I believe you said that this was a preparation of the questions, was a cooperative effort, is that what you said?

Mr. Weir: That is correct.

Mr. Hamilton: You worked with Mr. Minchew's attorneys who are, you had their names.

Mr. Weir: I think primarily I worked here with Mr. Fierer rather than Mr. Stiller. They were both present that day. But I think in the room when we were working on the questions, Mr. Fierer was the person who was cooperating with me.

Mr. McCullough: You were working in Mr. Stiller's office, though?

Mr. Weir: That is correct.

Mr. Hamilton: You were told by Mr. Fierer what ground; what area he wanted covered in the test.

Mr. Weir: Correct.

Mr. Hamilton: Did you make any effort to change the scope of the questions?

Mr. Weir: I changed one question which they wanted to ask which in my judgment would not have been a suitable question for polygraph use.

Mr. Hamilton: In terms of the general scope, the area covered, did you make any effort to change that?

Mr. Weir: To the extent that I was assisting in narrowing down the questions, to try to make each question cover a single issue, your statement would be correct. Generally, in working with attorneys, I find they want to include every possible eventuality in a question. It makes it too long and unwieldy to work with. The area to be covered by the test was decided by Mr. Minchew's attorneys.

The exact wording of the questions, that was my contribution to it.

Mr. Hamilton: Isn't it true that in the private polygraph field, that it is up to the client to pick the area of the questions?

Mr. Weir: Except where a client wants to ask you something which ethically you could not ask. The client generally sets the scope of the examination, yes.

Mr. Hamilton: Is it standard practice to let the attorneys for the client participate in drafting the questions?

Mr. Weir: Certainly.

Mr. Hamilton: After these questions were prepared by you and Mr. Frierer, were they reviewed by Mr. Minchew?

Mr. Weir: Yes.

Mr. Hamilton: Did Mr. Minchew approve of these particular questions?

Mr. Weir: Yes.

Mr. Hamilton: Mr. Weir, I understand that polygraphers or polygraph examiners have a code of ethics, is that correct?

Mr. Weir: That is correct.

Mr. Hamilton: Doesn't that code of ethics state that the first loyalty is to the client, to the person being examined?

Mr. Weir: Yes.

Mr. Hamilton: Because of that first loyalty, isn't it true that a result of a polygraph examination will not be released to the public or to anybody else unless the client gives his express permission?

Mr. Weir: That would not always be true. If I am conducting an examination for a prosecutor, then my loyalty may be to the client to see that he gets an honest, objective examination. But the release would not be under my control.

Mr. Hamilton: When you are not conducting an examination for a prosecutor, when you are conducting an examination for a private client like Mr. Minchew, isn't it true the results of that examination will not be

released until Mr. Minchew or whoever the client is, gives you his express permission?

Mr. Weir: My agreement was I would not myself release information unless given personal approval by Mr. Minchew or by the attorneys.

Mr. Hamilton: Mr. Weir, would you agree with me that in polygraph examinations that the formulation of the questions involved is an extremely important part of polygraph technique?

Mr. Weir: Yes, I would.

Mr. Hamilton: For the test to be useful, it has to be specifically directed to the subject matter under investigation, examination, the questions have to be specifically directed to that area.

Mr. Weir: I don't know what you mean by "for the test to be useful".

Mr. Hamilton: For the test to produce accurate results, is what I mean.

Mr. Weir: That is right. They must be in connection with the scope of the questions which must be reviewed with the person beforehand.

Mr. Hamilton: Mr. Weir, the record before this committee will show that Mr. Murphy of the FBI, when examining Mr. Minchew, got a deceptive negative response when he asked this question, "Did you lie when you said Talmadge knew that campaign contributions were deposited in the secret account?" You didn't ask that question, did you?

Mr. Weir: No, I did not.

Mr. Hamilton: The record before the committee will also show that Mr. Murphy got a deceptive negative response when he asked this question: "Have you been untruthful when you said Talmadge knew that secret account at the Riggs Bank?"

Mr. McCullough: Objection. Mr. Chairman, Mr. Murphy is going to be testifying about his own charts. Mr. Weir has already testified to the questions that he asked. We will be willing to stipulate that every question Mr. Murphy and Mr. Malinowski asked, Mr. Weir, didn't. I think they will testify to their own conclusions.

Mr. Hamilton: My question is simply whether he asked the question I just read.

Senator Morgan: Mr. Chairman, it is my understanding that under the Rules of Evidence, this witness would not be allowed to testify concerning another witness' testimony. However, he would be required to come back. We haven't followed that practice earlier. I think if Mr. Murphy is going to testify and Mr. Weir is not going to be present, I think this line would be all right. But if Mr. Weir is going to be present later, then we should approve it.

Senator Schmitt: I guess I don't quite understand. I think we know what questions Mr. Weir has asked. Maybe I misunderstood counsel's question.

Mr. Hamilton: My question is simply did he ask this question. I think it would be clearer when I ask my next question.

Senator Schmitt: It has been testified what questions he did ask.

Mr. Hamilton: I understand that. I am trying to make a point in my examination.

Senator Stevenson: You are going beyond asking the question and the witness' answer to then testify to answers given to that question when asked by another polygraph expert who will be called.

Mr. Hamilton: I don't believe I asked that question. What I did ask was whether he asked a question that I read, which Mr. Murphy asked. That was the question that I asked.

Mr. McCullough: I objected on the grounds of relevancy, Mr. Chairman, because it seems he has testified to his own test. He is not testifying to Mr. Murphy's test. He has testified to every question he did ask. He said he did not ask any other questions.

Senator Morgan: Will counsel call Mr. Murphy?

Mr. McCullough: Yes, but I can't see the relevance of Mr. Weir testifying to Mr. Murphy's test.

Senator Stevenson: The committee will recess for five minutes.

(Brief recess.)

Senator Stevenson: Beyond this one question, counsel, we don't want to go into Mr. Murphy's testimony and the results of his tests today. I understand you don't intend to do that and that the next question will be related to the Senator's knowledge. If my understanding is correct, we can proceed on this basis. Go ahead and repeat the question you have already answered. That will be the last along this line.

The next question will be with respect to the Senator's knowledge. There won't be any objection to that question.

Mr. McCullough: Mr. Chairman, before we proceed, during my examination, I omitted to offer as Exhibit 85, Mr. Weir's report and his charts and questions. I would like to formally offer them into evidence at this time so that we could correct the error on the record.

Senator Stevenson: Exhibit 85, they will be received in evidence.

(The document referred to was marked Exhibit No. 85 for reference.)

Mr. Hamilton: Mr. Chairman, so I will abide by the chair's wishes, I take it I may ask the question I was asking when there was an objection.

Senator Stevenson: Yes. The reason for that is that Mr. Weir will not be back. I think the objection is well taken, but we are proceeding irregularly because Mr. Weir will not be available to the committee and to you in the future.

Mr. Hamilton: The question was that the record shows that Mr. Murphy of the FBI got a deceptive negative response when he asked, "Have you been truthful when you said Talmadge knew about that secret account at the Riggs Bank?" My question to you was, you didn't ask that question, that particular question. Is that correct?

Mr. Weir: That is correct.

Mr. Hamilton: Mr. Weir, I would ask you to examine your questions. Isn't it correct to say that none of your questions are specifically directed

to Senator Talmadge's actual knowledge of the secret Riggs account?

Mr. Weir: That is correct.

Mr. Hamilton: For example, your question No. 6 which asks, "Did Senator Talmadge ever refuse to accept the cash you provided him," that question does not go to Senator Talmadge's knowledge of the secret Riggs account, is that correct?

Mr. Weir: That is correct.

Mr. Hamilton: Thank you.

Mr. Weir, who is Paul Minor?

Mr. Weir: Paul Minor I knew in the military when he was Chief of Quality Control for Criminal Investigation Division Polygraph Examinations. He is currently Chief of the FBI Polygraph Operation.

Mr. Hamilton: He is a qualified polygraph examiner?

Mr. Weir: Yes.

Mr. Hamilton: Did you have occasion to discuss your test with Mr. Minchew with Mr. Minor?

Mr. Weir: Mr. Minor called me on April 12th, and said that he had been advised that I had given Mr. Minchew a polygraph examination and asked me in general was I satisfied with my test results. I said yes. I told him I was under restrictions from counsel in the case, that I could not discuss it with anyone outside without their approval. He didn't ask me to discuss it in detail. He only asked me if I had given a test and was I satisfied with my results.

Mr. Hamilton: To your recollection, that was the extent of that discussion?

Mr. Weir: Yes.

Mr. Hamilton: Mr. Weir, who is John Reid?

Mr. Weir: John Reid is -- he is known to most of us as a father figure in polygraph. He is the author of perhaps the standard text in the field. He worked in the Chicago Crime Laboratory back in the 1930s when the polygraph field was just developing. He was a colleague of Leonard Keeler, who was perhaps the originator of the polygraph technique.

Mr. Hamilton: How long have you known Mr. Reid?

Mr. Weir: Since probably 1952.

Mr. Hamilton: You would say that he is very respected in his field?

Mr. Weir: He is highly respected in his field.

Mr. Hamilton: I take it you are familiar with his book, which is entitled, "Truth and Deception?"

Mr. Weir: Yes, I am.

Mr. Hamilton: Which he wrote with a man named Fred Inbau. Do you know him?

Mr. Weir: Mr. Inbau is a law professor at Northwestern University. He was originally a colleague of Mr. Reid in polygraph. He primarily wrote

a book as an expert on interrogation and cross-examination. His real strength was never in the actual conduct of polygraph examinations.

Mr. Hamilton: The book refers to him as -- the John Henry Wigmore -- Professor of Law at Northwestern University.

Mr. Weir: Yes.

Mr. Hamilton: I would like to read to you from page 61 of this book, "Truth and Deception." This, by the way, is the 1977 edition, which I am sure you are familiar with.

Mr. Weir: Yes.

Mr. Hamilton: Reading from page 16, "Concern over possible detection appears to be the principal factor accounting for the physiological changes that are recorded and interpreted as symptoms of deception. See particularly figures 27 and 28. In fact, all of the subsequent case illustrations regarding the application of the various stimulation procedures establish that unless a person is concerned over the possibility that his deception will be detected, his polygraph records will not disclose that deception."

You you agree with the statements contained in this paragraph I have just read?

Mr. Weir: I still think it is expressed a little more strongly than the matter deserves. I would have said may not rather than will not show up. But I agree with Mr. Reid that the fear of detection is a prime motivating factor in a polygraph test. It if is completely absent, the chances are you might not have reactions on your charts.

Mr. Hamilton: Let me read you from page 226 of Mr. Reid's book, where he says, "A person who is asked a large number of questions during a lengthy polygraph test may ultimately become unresponsive when he lies. The same factor may prevail with respect to several reexaminations by different examiners in order to check upon the accuracy of a prior examiner's diagnosis."

Do you agree with that statement by Mr. Reid?

Mr. Weir: Not completely, no.

Mr. Hamilton: But you do agree Mr. Reid is a respected authority in the field?

Mr. Weir: That is right. Perhaps if you let me explain here.

Mr. Hamilton: Would you answer my question first?

Mr. Weir: My answer was, not completely. I do not --

Mr. Hamilton: Do you agree Mr. Reid is a respected authority in the field?

Mr. Weir: Yes, sir.

Mr. Hamilton: In fact you agree this book is the standard work in the field?

Mr. Weir: No, not the standard. This is a point I would like to make. Mr. Reid is the originator of and a strong advocate of control question technique. Mr. Reid also operates a very highly successful commercial polygraph school in Chicago. He teaches his students from that book,

it is his textbook, for one technique. The other primary technique, is perhaps equally as well known and has been taught in Keeler School for longer than Mr. Reid's.

The only point I am trying to say here is Mr. Reid is a highly respected person but his book makes no effort to teach all of the techniques in the field nor does it make every effort to cover things which do not occur with his technique.

(1:30 p.m.)

Mr. Hamilton: In light of that I would take it you would disagree with the statement at page 224 where he indicates the relevant-irrelevant test procedure is obsolete.

Mr. Weir: I would disagree very strongly with it.

Mr. Hamilton: I thought you would disagree with it. Perhaps we can agree on this statement because I believe this is what you told me on April 27 when we met in my office. If an error is made on a polygraph examination, I take it errors are made on occasion --

Mr. Weir: Yes, sir.

Mr. Hamilton: If an error is made, is it true that the test results will normally show that a liar is truthful rather than someone who is truthful is telling a lie?

Mr. Weir: I hope so.

Mr. Hamilton: I take it that this is so because a number of factors can dampen the emotional response, for example, drugs, inadequate questions, th ings of that nature.

Mr. Weir: I would not agree with that statement as you phrased it. But the very possibility of error means you must bend over backwards to protect the person taking the test. As we brought out earlier, our first responsibility is to the examinee, the person being tested.

Mr. Hamilton: You give the examinee the benefit of the doubt?

Mr. Weir: Correct.

Mr. Hamilton: It is true a number of things can dampen the response; is that correct? For example, drugs.

Mr. Weir: Drugs as far as we are concerned give us no particular problems. We receive this sort of thing as a hypothesis again from the psychologists and physiologists. The person who has taken a depressant drug, if he has so much in him he does not react at all, you get in the charts, inconclusive; if he doesn't react at all, the test is worthless. If he gets -- you can tell this physically. The man comes in with his eyes glazed, his speech is slurred. You know immediately this person isn't normal. So that things which people commonly say would give us trouble do not because, again, we know, for example, of no selective drug that would permit the person to react to the control question but would prevent him from reacting to the relevant question. Anything which operates at the same level completely throughout the test is no difficulty for you.

Mr. Hamilton: I just have one other question. That is, in your years of

testing, have you ever made a mistake and found that a person who was lying was shown to be truthful?

Mr. Weir: Yes, sir.

Mr. Hamilton: No further questions.

Senator Proxmire: Any further questions?

Senator Schmitt: Mr. Weir, when you worked out the questions that you asked Mr. Minchew, were you completely satisfied with the way the questions were put together and their sequence?

Mr. Weir: The sequencing is immaterial because I am going to skip around and repeat the questions during the test. One or two of them were longer than I would have liked but in all honesty, I couldn't think of a way to make them shorter. So I was satisfied with them from the point of view this was a complex issue I was testing and I couldn't do it with a very simple four or five word question.

Senator Schmitt: So you did not feel you were biased by Mr. Minchew's counsel in the creation of these questions?

Mr. Weir: On, no, sir.

Senator Schmitt: We have talked a little bit about beating the machine. Is willpower a sufficient mechanism for beating the machine? Have you ever run into somebody who, in those cases you mentioned, somebody who appeared to tell the truth or actually lied, is that a willpower or some other factor? No drugs.

Mr. Weir: If a person doesn't react at all and should have reacted but otherwise reacted normally to other questions on the test, we don't know what happens there. Drugs, hypnosis, conditioning, all those things have been attempted by people who were trying to beat the test.

We have not found they were very successful. For example, most of the examinations given in the United States now, I suppose are given by police departments in criminal investigations. The criminal grapevine is full of all sorts of things that supposedly you can do to keep a polygraph from working.

The Washington Post said several years ago, put a tack in your shoe or wiggle your toes and think of sex, any number of things. They don't work.

If they did we wouldn't get the 90 percent accuracy readings we do achieve. So the only thing I can say as an examiner of more than 25 years in the field is, I know of no way to beat a test except don't take it.

Senator Schmitt: Mr. Weir, do you know of any ways in which the results of the test can be amplified by the individual, drinking too much coffee? Are there drugs that would enhance the results rather than flatten them out?

Mr. Weir: We have problems in the field with what we call excessive nervous tension. This is the reason for 95 percent of our inconclusive tests. So if he was terrified that he might be under suspicion, you cannot tell anything from the chart except that he was scared to death, you probably would retest the person after a day or two.

Here the fear of the unknown which might have been operating the first time no longer is in operation. He knows what he is going to be asked. He knows he will be treated with courtesy and respect. He knows there is nothing painful about the test so the thing is, if there was genuine nervous tension the first time around, the second time it clears up or in case he happened to be worried because he was going to lie to one or more questions, then his reactions became localized and we can see the place where the problem was being created.

It is impossible to give you a firm answer, except to say in general I know nothing which operates selectively as far as the test goes. If you have relevant questions and irrelevant questions and controls, and both techniques have these, then your test is going to work.

Senator Schmitt: Were the three tests that you ran, conducted on the same day, sequential?

Mr. Weir: Yes, sir. One right behind the other.

Senator Schmitt: What kind of interval of time elapsed?

Mr. Weir: Usually about two or three minutes. I let the pressure out of the blood pressure cuff. I talk casually to ask if there was anything troubling him or how he felt about it so far and thanked him for his cooperation and then proceeded to the next one. So my whole examination began at 4:15, and at 5:17 p.m., Mr. Minchew was walking out the door, everything was completed.

Senator Schmitt: Do you ordinarily like to do the three at the same time?

Mr. Weir: No, sir. This would always be this way because I am going to compare one chart with the other. This would only be valid if the conditions were held constant. So if Mr. Minchew came back the next day, I would have to run three more charts because I can't compare yesterday's with today's. He had a different frame of mind, different breakfast. We hold the conditions constant under which the test was given.

Senator Schmitt: Was there anyone in the room besides you and Mr. Minchew when these tests were given?

Mr. Weir: No, sir.

Senator Schmitt: That was true for the entire hour and two minutes?

Mr. Weir: That is correct. Except at the end his attorneys came in and discussed the matter with me. I told them in my judgment he was truthful. We called him back in and told him also.

Senator Schmitt: There were not outside influences at all during that hour period of time?

Mr. Weir: No, sir.

Senator Schmitt: Other than yourself and the equipment?

Mr. Weir: Right.

Senator Schmitt: And Mr. Minchew?

Thank you, Mr. Chairman.

Senator Stevenson: Any further questions?

Senator Morgan?

Senator Morgan: Mr. Weir, when you said other, the attorneys came in, who were the attorneys?

Mr. Weir: Mr. Robert Fierer and Mr. Stuart Stiller.

Senator Morgan: It was in their office, or one of their offices here?

Mr. Weir: It was in Mr. Stiller's office. Mr. Fierer, I understand, is from Georgia, Atlanta or Savannah.

Senator Morgan: Earlier in your testimony you described other persons who were present. Can you tell us again who they were?

Mr. Weir: They were there when I came in the waiting room. Mr. Stiller was in conference. Mr. Fierer hadn't come in. He was expected in town. We sat there in the waiting room. These two gentlemen were also there. There was no conversation at all between us. I didn't know who they were. They didn't know or presumably weren't interested in who I was.

Then, after Mr. Stiller came out, took them with him. I believe Mr. Fierer came in and went out with these two gentlemen, left the office suite completely. Then, at that time, I was told by Mr. Stiller that these gentlemen were writers for an Atlanta paper. They did not want them there while the examination was going on. I would not have agreed to their being present at any event while I was conducting an examination.

The only time we would use someone else is if there was a language problem and I had to work through an interpreter.

Senator Morgan: You identified one of the reporters as being the gentleman sitting in back of you. Can you identify the other one?

Mr. Weir: No, sir. I can't. In fact, if it hadn't been for the shock of white hair, and I was jealous about it, I wouldn't recognize the other gentleman.

Senator Morgan: Were you introduced to him and if so, do you remember his name?

Mr. Weir: No, sir. I was never introduced to them.

Senator Morgan: So you do not know whether he was a reporter or a lawyer, do you?

Mr. Weir: I believe I was told by the attorney present, by Mr. Stiller, I believe, that they were both reporters. I may have misunderstood this.

Senator Morgan: Were you told by him they were reporters or for what paper?

Mr. Weir: I got a call from Mr. Fierer on April 5th, who told me a reporter from the Atlanta Constitution would be calling concerning the test and that I had his permission to discuss this with the reporter.

I do not think it was Mr. Kellner who called. It was someone else. I received another call from a reporter from the Atlanta Journal and I refused to talk to him since I did not have permission to do so.

Senator Morgan: Did the Atlanta Constitution pay your fee?

Mr. Weir: My fee was paid by Mr. Minchew. At least the check I received was from Mr. Minchew.

Senator Morgan: Earlier you were asked a question concerning the number of times that a person takes the examination.

Were you told that Mr. Minchew had taken three previous examinations?

Mr. Weir: No, sir. I was told he was tested on two previous occasions.

Senator Morgan: I believe the question that Mr. Hamilton asked you, quoting from Mr. John Reid's book, was a two-part question.

Do you have that particular quote?

The quote that he read to you was that a person who is asked a large number of questions during a lengthy polygraph test may ultimately become unresponsive when he lies. The second part is the part I am interested in; the same factor may prevail with respect to several reexaminations by different examiners in order to check upon the accuracy or examiner's diagnosis.

Do you disagree?

Mr. Weir: I disagree with it because I know for a fact that it doesn't occur because I worked in an office where up to three examinations; reexaminations were conducted and successfully by different examiners. We would almost invariably assign a different examiner to the reexamination merely for the possibility there might have been a concealed personality clash and the subject wasn't willing to cooperate with the examiner.

Senator Morgan: One other question with regard to reporters. Have you before had occasion to conduct examinations when reporters accompanied the -- what do you call them, the client coming in to take the examination?

Mr. Weir: I don't think I ever have before. I have conducted examinations where the press was interested in them, but never there at the time or accompanying the client to the examination.

Senator Morgan: Have you ever been employed, to your knowledge, by the press, to conduct an examination?

Mr. Weir: No, sir, I have not.

Senator Morgan: Thank you.

Senator Stevenson: Any further questions, Counsel?

Mr. McCullough: Yes, sir, I have just a couple.

Mr. Weir, this requestioning and retesting, the technical phrase for that term is habituation, is it not?

Mr. Weir: Sometimes they call it conditioning.

Mr. McCullough: Isn't it a fact that for this to be operative that the retesting and the reexamination has to be fairly close in proximity and time?

Mr. Weir: Not only be close but very, very extensive.

Mr. McCullough: Would you consider three or possibly four separate polygraph examinations widely dispersed by a period of weeks or months to be such repetitive questioning, that it would cause this response to take place, this habituation?

Mr. Weir: No, sir, I would not.

Mr. McCullough: How fast does the autonomic nervous system replenish itself?

Mr. Weir: A matter of hours, a person is completely exhausted, give him a meal, a chance to rest and their autonomic nervous system is functioning perfectly again.

Mr. McCullough: I think Mr. Hamilton asked you when you were at NSA, were you involved in employment screening to a large extent? You answered yes.

Mr. Weir: Yes.

Mr. McCullough: Isn't it a fact you also were involved in a resolution of issues which would be criminal, for instance, passage of espionage information or classified information?

Mr. Weir: Yes, sir. Many covered the complete range of what could be considered criminal matters. We did not have criminal jurisdiction so we used the polygraph as an investigative matter prior to referring a case necessary to the FBI for criminal action.

Mr. McCullough: He also asked as an examiner, have you made mistakes. I think you said you have given around 5,000 examinations, more or less and supervised approximately 50,000. Do you have any idea how many mistakes you might have actually made, proven mistakes?

Mr. Weir: Proven mistakes, my error rate was down less than one-half of one percent or perhaps even less than that. We did have the opportunity, of course, of a background investigation being conducted and returned to us so that we learned of our mistakes perhaps more so than many other examiners in the field would have the opportunity to do. The mistakes discovered were very, very minimal. A figure would really be pretty meaningless here except it was never high enough to be a matter of concern.

Mr. McCullough: As I understand it, you were asked about two issues, one was disbursement of funds to the secret account, the Senator's receipt, whether he knew the money came from a particular bank account or not, the fact he got it. Is that right?

Mr. Weir: That is right.

Mr. Hamilton: I object to that. I don't believe his questions go to whether Talmadge knew.

Mr. McCullough: I said they do not. They do know of the bank account.

Mr. Hamilton: I thought you asked the question as if he asked about Talmadge's --

Mr. McCullough: No, I did not. Secondly, you were asked to resolve the issue concerning Mrs. Tisdale and her potential or possible collaboration with Mr. Minchew, as I understand it. Is there anything improper or unethical in the ethics of a reputable polygraph examiner about framing questions that can be answered truthfully by the client so he pass a polygraph examination?

Mr. Weir: Not in my judgment, no, sir.

Mr. McCullough: I have no further questions.

Senator Stevenson: Any further questions?

If not, the committee will recess until 9:30 tomorrow morning. The committee is recessed.

(Whereupon at 1:55 p.m., the committee recessed, to reconvene at 9:30 a.m., Tuesday, May 8, 1979.)

* * * * * *

"Modern Status of Rule Relating to Admission of Results of Lie Detector (Polygraph) Test in Federal Criminal Trials"

By

Jean F. Rydstrom

§ 1. Introduction.

[a] Scope

Cases in which the federal courts have ruled upon the admissibility of the results of polygraph (or lie detector) examinations in federal criminal trials are collected and analyzed in this annotation, the aim being to present (without an exhaustive collection of the cases) the modern view of the courts on this sort of evidence.

[b] Related matters

Admissibility of lie detector tests taken upon stipulation that the results will be admissible in evidence. 53 ALR3d 1005.

Enforceability of agreement by state officials to drop prosecution if accused successfully passes polygraph test. 36 ALR3d 1280.

Validity and construction of statutes licensing or otherwise regulating operators of polygraph or similar devices. 32 ALR3d 1324.

Propriety and prejudicial effect of comment or evidence as to accused's willingness to take lie detector test. 95 ALR2d 819.

Physiological or psychological truth and deception tests. 23 ALR2d 1306.

Problems Remaining for the "Generally Accepted" Polygraph. 53 Boston U. L. Rev. 375, March 1973.

Polygraphy: Short Circuit to Truth. 29 U. of Fla. L. Rev. 286, Winter, 1977.

Higleyman, The Deceptive Certainty of the "Lie Detector." 10 Hastings LJ 47 (1958).

Tarlow, Admissibility of Polygraph Evidence in 1975: An Aid to Determining Credibility in a Perjury-Plagued System. 26 Hastings LJ 917, February 1975.

The Rule of the Polygraph in Our Judicial System. 20 SC 1 Rev 804, 1968.

Skolnick, Scientific Theory and Scientific Evidence: An Analysis of Lie-Detection. 70 Yale LJ 694 (1961).

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Louisell and Mueller, Federal Evidence.

Wharton's Criminal Evidence.

§ Summary and comment

[a] Generally

The modern status of polygraph evidence in federal criminal trials is not much different with respect to its actual admission into evidence than it was in 1923 when a federal court first considered lie detector tests. This was in Frye v United States (1923) 54 App DC 46, 293 F 1013, 34 ALR 145, infra § 3, in which the court stated that the principle or discovery from which a deduction is made must be sufficiently established to have gained general acceptance in the particular field in which it belongs, and held that the systolic blood pressure deception test offered in that case had not yet gained such standing and scientific recognition among physiological and psychological authorities as would justify the courts in admitting testimony deduced from the discovery, development, and experiments thus far made.

* COMMENT: The polygraph has greatly advanced since the evidence based on systolic blood pressure was rejected in Frye, the modern polygraph measuring and recording a number of involuntary body responses to stress. It measures and records blood pressure changes, pulse changes, and respiration changes, as well as changes in the skin's resistance to electricity. It appears that the sophistication of these measurements is constantly improving and that it is likely that devices will be developed for use in the future to measure other involuntary body responses to stress. See United States v. Ridling (1972, DC Mich) 350 F Supp 90.

* CAUTION: A study of the theory and process of the polygraphy examination reveals complexities not present in the fields of fingerprint, handwriting, voice print, ballistics, and neutron activation analysis, all of which are based on the identity or behavior of physical phenomenon. The experts and studies differ as to the capability of the polygraph industry to cope with these complexities,[1] but none would dispute their existence. The distinction is that polygraphy, albeit based on a scientific theory, remains an art with unusual responsibility placed on the examiner. The acquainting of the examiner with the subject matter is often a source of improper suggestion, conscious or subconscious. The preparation of the test and discussion with the examinee of the polygraph procedure furnishes additional opportunity for improper subjective evaluation. The construction of the examination further proliferates controversy, for while experts may agree that a particular examination was inconclusive, they often do so for different reasons. See United States v Wilson (1973, DC Md) 361 F Supp 510.

Since the decision in Frye was published, its result has been tersely applied by most federal courts as a sort of per se rule of exclusion (§ 3, infra), but in recent years some courts have given careful consideration to the improved state of the art since the decision in Frye, thereby recognizing what the Frye court recognized: that polygraph evidence might some day gain general acceptance in its field and be shown sufficiently reliable for admission in a federal criminal trial. One such court has found polygraph evidence sufficiently reliable to warrant its admission in defendant's behalf (§ 5, infra), absent special circumstances (§ 6, infra), but generally the

federal courts have not reached the stage of general acceptance. However, very recent decisions of the Sixth, Seventh, Eighth, and Ninth Circuit Courts of Appeals and a District Court in the Fifth Circuit, have stated that the admissibility of such evidence is a matter within the trial court's discretion (§ 4, infra), although to date, that discretion has consistently been exercised to exclude the evidence.[2] Exceptions have occurred when polygraph evidence was received under special circumstances such as conditions imposed by the court (§ 6[a], infra), or a stipulation of the parties as to admissibility (§ 6[b], infra), or when justice required (§ 6[c], infra).

In the year that the Frye decision was reported, Professor Wigmore observed that, "if ever there is devised a psychological test for the evaluation of witnesses, the court will run to meet it."[3] However, the courts have not "run to meet the lie detector,"[4] and the considerations and arguments against admitting polygraph evidence are many and cogent. Basic, no doubt, is their unproved reliability[5] and judicial distrust of the results.[6] In United States v Bursten (1977, CA7 Ind) 560 F2d 779, the court said, with respect to the admissibility of the results of polygraph examinations, that the consistent rejection by federal courts of the results obtained through the use of such "truth-determining" devices stems from a multiplicity of factors. Among these, the court noted, were the distrust of the accuracy of results based upon a nexus between autonomic discharge and veracity, this skepticism being fueled by disagreement among experts in the field. Also, judges loath the specter of trial by machine, wherein each man's sworn testimony may be put to the electronic test, the court said, and finally there exists the apprehension that jurors will abdicate their responsibility for determining credibility, and rely instead upon the assessment of a machine.[7]

To overcome judicial distrust of polygraph test results and permit their admission in evidence, an adequate foundation must be laid as to their general reliability (§ 8, infra), but the courts in some cases in which a foundation was laid have found that the unreliability of a particular polygraph examination warranted exclusion of the test results (§ 7, infra). With respect to considering particular tests, it has been held, however, that the administration of justice cannot tolerate the burden of litigation inherently involved in the process of determining to probative value of a polygraph test.[8] Chiefly in the Ninth Circuit,[9] the courts have determined that even if reliability of a polygraph test can be established, a trial court can reject such evidence on the ground that it will introduce time-consuming, potentially prejudicial, and perhaps confusing collateral issues into the trial (§ 9, infra). Justification for refusing to admit evidence as to a polygraph examination while admitting other fallible evidence such as eyewitness identification has been found in the fact that eyewitness testimony is virtually indispensable, and that in addition, the jury is designed to evaluate such testimony based on common sense and ordinary experience; while the testimony of polygraph experts is not indispensable to the resolution of particular legal issues, and the evaluation of the testimony of polygraph experts is beyond the realm of ordinary experience.[10]

* NOTE: The United States Supreme Court has not ruled upon the admissibility of polygraph test results. It referred to the matter in Schmerber v California (1966) 384 US 757, 16 L Ed 2d 908, 86 S Ct 1826, in discussing the Fifth Amendment and self-incrimination, and the distinction which has emerged in the cases, that the privilege is a bar against compelling

"communications" or "testimony," but that compulsion which makes a suspect or accused the source of "real or physical evidence" does not violate it. While this was a helpful framework for analysis, the court continued, some tests seemingly directed to obtaining "physical evidence," for example, lie detector tests measuring changes in body function during interrogation, might actually be directed to eliciting responses which were essentially testimonial. To compel a person to submit to testing in which an effort would be made to determine his guilt or innocence on the basis of physiological responses, whether willed or not, the court said, was to evoke the spirit and history of the Fifth Amendment. However, it has also been pointed out that since a polygraph test cannot be administered without the full cooperation of the subject, it is possible that the mere taking of the examination is tantamount to a waiver of constitutional rights against self-incrimination, to the effective assistance of counsel, and to a fair trial, if adequate warnings are given. See United States v Oliver (1975, CA8 Mo) 525 F2d 731, cert den 424 US 973, 47 L Ed 2d 743, 96 S Ct 1477.

A court approving the admission of polygraph evidence because of particular circumstances has rejected some of the arguments for exclusion of such evidence. With respect to the argument that evidence of the results of a polygraph test were such that a jury would attach too much weight to it, the court pointed out in United States v Ridling (1972, DC Mich) 350 F Supp 90 (infra § 6[a]), that while a court must always be alert to prevent the use of evidence that had marginal utility in the process of truth seeking if it was of such a nature as to over-impress the jury, the evidence offered in this case was not in any way remote to the issues to be determined, but went to the very heart of the perjury with which the defendant was charged. In comparable situations, the courts do not reject evidence of radar, fingerprints, ballistics evidence, blood tests, and voice prints, the court continued, where the evidence is admitted for its worth. While it was urged in this case that because the evidence did in fact go to the very heart of the case of perjury, and because it had the aura of scientific acceptability, it should be rejected on the theory that too much weight will be given to it, the court said that speed-test devices established the central issue in speeding cases, and breathalyzers and blood tests establish the central issue in cases involving intoxication. The court stated that the fact was that the relevancy of the polygraph evidence was high and its use would likely protect society and the defendant.[11]

[b] Practice pointers

Counsel will find no resolution of the matter of admitting polygraph evidence in the Federal Rules of Evidence. However, it may be noted that the Rules clearly do not make such evidence inadmissible.[12] The Rules will permit the introduction of evidence of the results of polygraph tests when the courts recognize a sufficient degree of reliability in the results of such a test, and overcome their distrust of them for collateral reasons such as usurpation of the function of a jury in determining the ultimate issue, the time necessarily consumed at present in establishing reliability of polygraph tests, and their fear of injecting collateral issues into a case.

While counsel in federal court will find scant comfort in the federal decisions for admissibility of polygraph test results, the matter is still worth pursuing when the defense to criminal charges depends upon defendant's

credibility.[13] While a trial court's decision to admit such results is not likely at present to survive appellate review if the government appeals the ruling,[14] the District Courts have generally been more receptive to hearing and weighing polygraph evidence, even though they may ultimately reject it for particular reasons, than have the Court of Appeals to approve it,[15] and counsel may secure an acquittal because of a reasonable doubt raised by testimony as to defendant's favorable test results.[16]

Counsel for the defendant in a criminal case would be well advised, particularly when it is known that the government will rely upon plea bargaining agreements with coparties for their testimony at trial, to discover whether the government has had its witnesses polygraphed in order to obtain the results. In one case, the court ruled that the government had a duty to supply the results of a polygraph test of the government's star witness to the defendants, and that the results of the test would be admissible so that the jury could evaluate the witness' credibility.[17]

Counsel may be able to seek and obtain a polygraph examination at public expense of his client prior to trial, but he runs the risk that the polygraphic evidence may be used for the impeachment of his client when he takes the witness stand during trial.[18] Generally, a defendant will not be permitted to buttress his credibility by stating that he would be willing to take a lie detector test,[19] but such an offer may be accepted with unfortunate consequences. In one case a defendant under stiff cross-examination asserted that he was willing to take a polygraph test, and at an out of court hearing a stipulation was entered as to the admissibility of the results of the test. The defendant then took the examination, failed it, and the evidence was promptly introduced against him. It was held that while the fact of defendant's willingness or refusal to take a polygraph test was not admissible as evidence, the stipulation entered in this case for the admissiblity of the test results was proper.[20]

If defense counsel seeks to enter a stipulation for the introduction of polygraph evidence, it is incumbent upon him to pretest the client with a polygrapher of counsel's own choosing. Failing to do this may amount to incompetence because counsel is necessarily ignorant of what the results of the test will be. Usually the issue upon which a test is given is dispositive of a case, and by stipulating to what may be the most crucial evidence against his client, defense counsel could be deemed to be withdrawing a crucial defense.[21] To remedy this problem, a prestipulation private examination should be run on a defendant, and if the results are favorable, the stipulation may be entered with some degree of confidence that the results of the second test will not result in disaster.

* COMMENT: A polygrapher with unimpressive credentials will not carry much weight with a court, and will be subject to discrediting by a more qualified expert called by the government.[22] To the extent possible, the polygrapher should have the following qualifications: (1) the examiner should have graduated from an accredited American Polygraph Association School; (2) in those states where there are licensing statutes, the polygrapher must hold such a license; (3) the polygrapher should be a member of national and state professional organizations and should continue his education in the profession by subscribing to relevant periodicals; (4) the examiner must have a

great deal of experience conducting examinations and particularly in a criminal case should have run hundreds of such examinations in the context of criminal prosecutions; (5) the examiner should use a control question technique without personal deviation so that other similarly trained polygraphers will be able to "blind read" the polygrams and arrive at the same conclusion; and (6) the polygrapher should be able to numerically score the results in the polygrams to determine that the result is conclusively deceptive or not deceptive, although most competent examiners admit that in 5 to 20 percent of the cases will not be able to render a conclusive opinion. Inconclusive results are simply those which are "too close to call," and a competent examiner is not reluctant to make such a finding. Defendant's attorney would be wise to ask a prospective examiner what percentage, if any, of the inconclusive results he has had in the past.

Counsel may support a motion for a new trial because of newly discovered evidence that a witness has lied, by offering polygraph evidence to show that a new witness is telling the truth,[23] but if counsel seeks a new trial because of newly discovered evidence on the basis of defendant's willingness to take a lie detector test to establish his innocence, the motion will be denied.[24]

§ 3. Per se rule of exclusion of test results

Judicial distrust of polygraph test results, whether because they have failed to gain general acceptance in the scientific community, because they have not been shown to possess a sufficient degree of reliability for use in a criminal trial, or because of policy considerations such as usurpation of the function of a jury (see § 2[a] supra), has resulted in a general denial of their admissibility in federal courts up to the present time. In numerous cases these courts have accepted what virtually amounts to a per se rule of inadmissibility, or approving the exclusion, often without discussion, of the results of polygraph tests offered in evidence.[25]

Second Circuit - United States ex rel. Sadowy v Fay (1960, CA 2 NY) 284 F2d 426, cert den 365 US 850, 5 L Ed 2d 814, 81 S Ct 814,[26] United States v Stromberg (1959, DC NY) 179 F Supp 278; United States v Hart (1971, DC NY) 344 F Supp 522.

Third Circuit - United States ex rel. Szocki v Cavell (1957, DC Pa) 156 F Supp 79.

Fourth Circuit - United States v Wilson (1973, DC Md) 361 F Supp 510.

Fifth Circuit - United States v Frogge (1973, CA5 Tex) 476 F2d 969, cert den 414 US 849, 38 L Ed 2d 97, 94 S Ct 138; United States v Pacheco (1974, CA5 Fla) 489 F2d 554, reh den (CA5 Fla) 491 F2d 1272 and cert den 421 US 909, 43 L Ed 2d 774, 95 S Ct 1558; United States v Gloria (1974, CA5 Tex) 494 F2d 477, reh den (CA5 Tex) 496 F2d 878 and cert den 419 US 995, 42 L Ed 2d 267, 95 S Ct 306; United States v Cochran (1974, CA5 Fla) 499 F2d 380, reh den (CA5 Fla) 502 F2d 1168 and cert den 419 US 1124, 42 L Ed 2d 825, S Ct 810; United States v Masri (1977, CA5, Fla) 547 F2d 932, 43 ALR Fed 60, reh den (CA5 Fla) 550 F2d 42 and cert den 431 US 932, 53 L Ed 2d 249, 97 S Ct 2640 and cert den 434 US 907, 54 L Ed 2d 195, 98 S Ct 309.

Sixth Circuit. - United States v Tremont (1965, CA6 Tenn) 351 F2d 144,

cert den 383 US 944, 16 L Ed 2d 207, 86 S Ct 1198; United States v Fife (1976, CA6 Ky) 573 F2d 369, cert den 430 US 933, 51 L Ed 2d 777, 97 S Ct 1555.

But see other cases from the Sixth Circuit, infra § 4.

Eighth Circuit - Aetna Ins. Co. v Barnett Bros., Inc. (1961, CA8 Iowa) 289 F2d 30; McCroskey v United States (1965, CA8 Mo) 339 F2d 895; United States v Sockel (1973, CA8 Mo) 478 F2d 1134; United States v Alexander (1975, CA8 Minn) 526 F2d 161.

But see later decisions of the Eighth Circuit Court of Appeals infra § 4.

Ninth Circuit - United States v Sadrzadeh (1971, CA9 Cal) 440 F2d 389, 92 S Ct 84; United States v Salazar-Gaeta (1971, CA 9 Cal) 447 F2d 468; United States v Jenkins (1972, CA9 Ariz) 470 F2d 1061, cert den 411 US 920, 36 L Ed 2d 313, 93 S Ct 1544.

But see later Ninth Circuit cases infra § 4.

Tenth Circuit - Marks v United States (1958, CA10 NM) 260 F2d 377, cert den 358 US 929, 3 L Ed 2d 302, 79 S Ct 315; United States v Wainwright (1969, CA10 Colo) 413 F2d 796, cert den 396 US 1009, 24 L Ed 2d 501, 90 S Ct 566 (but excluding test results on other grounds);[27] United States v Rodgers (1969, CA10 Okla) 419 F2d 1315, later app (CA10 Okla) 446 F2d 623; United States v Russo (1975, CA10 Kan) 527 F2d 1051, cert den 426 US 906, 48 L Ed 2d 831, 96 S Ct 2226, reh den 427 US 913, 49 L Ed 2d 1204, 96 S Ct 3201 (but excluding test results on other grounds).[28]

Dist Col Circuit - Frye v United States (1923) 54 App DC 46, 293 F 1013, 34 ALR 145; Tyler v United States (1951) 90 App DC 2, 193 F2d 24, cert den 343 US 908, 95 L Ed 1326, 72 S Ct 639 (but decided on other grounds); United States v Zeiger (1972) 155 App DC 11, 475 F2d 1280; United States v Skeens (1974) 161 App DC 131, 494 F2d 1050.

The first reported case in which a federal court considered lie detector tests was Frye v United States (1923) 54 App DC 46, 293 F 1013, 34 ALR 145, an appeal from a conviction of murder in which defendant asserted error in the trial court's refusal to permit him to offer an expert witness to testify to the results of a "deception test" made upon defendant. The test was described as a systolic blood pressure deception test, counsel asserting the blood pressure was influenced by changes in the emotions of the witness; that the systolic blood pressure rises were brought about by nervous impulses sent to the sympathetic branch of the autonomic nervous system; and that scientific experiments had demonstrated that conscious deception, concealment of facts, or guilt of crime, accompanied by fear of detection when the person was under examination, raised the systolic blood pressure. The Court of Appeals affirmed the trial court's rejection of this offer, noting that the theory seemed to be that truth was spontaneous and came without conscious effort, while the utterance of a falsehood required a conscious effort which was reflected in the blood pressure. The court then stated the principles and laid down the rules that have been quoted and followed by most courts ever since; that just when a scientific principle or discovery crosses the

line between the experimental and demonstrable stages is difficult to define, but that somewhere in this twilight zone, the evidential force of the principle must be recognized; and that while courts will go a long way in admitting expert testimony deduced from a well recognized scientific principle or discovery, the thing from which the deduction is made must be sufficiently established to have gained "general acceptance" in the particular field in which it belongs. The systolic blood pressure deception test, the court concluded had not yet gained such standing and scientific recognition among physiological and psychological authorities as would justify the courts in admitting testimony deduced from the discovery, development, and experiments thus far made.

Where a state prisoner sought a writ of habeas corpus and appealed its denial, in United States ex rel Sadowy v Fay (1960, CA2 NY) 284 F2d 426, cert den 365 US 850, 5 L Ed 2d 814, 81 S Ct 814, the Court of Appeals held that the evidence he had sought unsuccessfully to introduce at his trial as to the results of a pathometer (lie detector) test he had taken, which would show his innocence, was properly excluded. The court noted that while petitioner contended that adequate proof of the efficacy of the pathometer was presented, it was generally recognized that there was insufficient evidence tending to show a general scientific recognition that the pathometer possessed efficacy. Since the exclusionary rule is overwhelmingly if not universally followed in other jurisdictions, both state and federal, the court stated, it could not be said to violate due process to exclude such evidence, and while the courts might one day accord general recognition to lie detector tests, due process did not require them to do so under the present state of the art.

In United States v Stromberg (1959, DC NY) 179 F Supp 278, defendants moved for a new trial on the basis of a report of a polygraph examiner's test of one of them, the examiner having concluded that this defendant was not involved in any type of conspiracy with the persons named in the indictment. The court held that the polygraph test report could not possibly produce a different result at a new trial, for clearly it would not be admissible. The court said that its decision was not based merely on precedent, no case having been found where such evidence was admitted in a federal court, but on recognition that the most important function served by a jury was in bringing its accumulated experience to bear upon witnesses testifying before it, in order to distinguish truth from falsity. A machine cannot be examined or cross-examined, the court continued, and its "testimony" as interpreted by an expert is, in that sense, the most glaring and blatant hearsay. The court stated that while the defendants cited articles which established the scientific accuracy of polygraph tests, it was not prepared to rule that the jury system was as yet outmoded.

The defendant in United States v Wilson (1973, DC Md) 361 F Supp 510, moved for permission to take a polygraph examination at government expense, but the court denied the motion after considering the reliability of such tests at length. It was argued that psychiatric testimony was admissible on important issues such as the criminal defense of insanity, but the court pointed out that such testimony was indispensable to the resolution of particular legal issues, and that such was not the case with polygraphy. While there were those who were liberally disposed to admit expert evidence, the court went on, they should be reminded that only those defendants who

successfully took polygraph examinations would move their admission in court. Furthermore, the court said, the defendant with means was in a position to take an examination in confidence, with the knowledge that if he failed, he need not disclose the results, and perhaps he might succeed on the next try, this sense of security diminishing the fear of discovered deception upon which an effective examination depended. The court said that equally troublesome was the discrimination against the indigent defendant who could not take an examination without the government's financing and knowledge.

A defendant convicted of conspiracy to import heroin contended on appeal in United States v Masri (1977, CA5, Fla) 547 F2d 932, 43 ALR Fed 60, reh den (CA5 Fla) 550 F2d 42 and cert den 431 US 932, 53 L Ed 2d 249, 97 S Ct 2640 and cert den 434 US 907, 54 L Ed 2d 195, 98 S Ct 309, that the trial court, upon the urging of the government, had refused to allow into evidence the results of a polygraph test he had taken. The Court of Appeals held that the trial court properly refused to consider the results of this test, because, unlike some other circuits, the rule was well established in the Fifth Circuit that the results of lie detector tests were inadmissible in federal criminal cases.[29]

The issue on appeal in United States v Alexander (1975, CA8 Minn) 526 F2d 161, was whether the District Court erred in refusing to admit the results of an unstipulated polygraph examination offered by defendant. Based upon its conclusion that the polygraph did not presently command general scientific acceptance and had not been shown to be sufficiently reliable, the Court of Appeals held that the District Court properly refused to admit the unstipulated polygraph evidence in this case. In applying the scientific acceptability standard to polygraph tests, the court stated, all United States Courts of Appeals addressing the issue have excluded the results of unstipulated polygraph tests as not commanding scientific acceptability and as not being sufficiently reliable in ascertaining truth and deception to justify their utilization in the trial process, but most of these cases manifested rather laconic discussions of why polygraph results should be inadmissible. The stated authority for exclusion is generally Frye v United States, supra, the court went on, but the polygraph used in Frye measured only variations in the examinee's blood pressure and was a relatively unsophisticated precurser to the modern polygraph machine which measures many other physiological responses. The court then considered in detail evidence as to whether the modern polygraph machine and technique had attained sufficient scientific acceptance among experts to justify the admission of the results of an unstipulated polygraph examination in evidence, and concluded that while polygraph science and its instruments had advanced significantly since the Frye Case, there was not sufficient scientific acceptability and reliability to warrant the admission of the results of such tests in evidence at a criminal trial.[30]

In United States v Jenkins (1972, CA9 Ariz) 470 F2d 1061, cert den 411 US 920, 36 L Ed 2d 313, 93 S Ct 1544, an attorney indicted on charges of conspiracy to import marijuana privately took a polygraph test to bolster his explanation of his part in the transaction but the trial court refused to consider it. His conviction was affirmed by the Court of Appeals which pointed out that after this encouraging dry run or experiment with the polygraph, he had offered to stipulate to take another test, given by an operator

chosen by the government, and to have both tests reported to the jury. The government understandably refused so to stipulate, the court stated, and the trial court correctly rejected the offer of defendant's "electrical oath-helper."

§ 4. Results of test admissible in court's discretion

Rejecting a per se rule of exclusion, the courts in a number of cases have held that the determination whether to admit evidence of the procedures used in polygraph testing and the results obtained in particular tests is a matter within the trial court's discretion.

Fifth Circuit - United States v Lanza (1972, DC Fla) 356 F Supp 27, affd (CA5 Fla) 489 F2d 554, reh den (CA5 Fla) 491 F2d 1272 and cert den 421 US 909, 43 L Ed 2d 774, 95 S Ct 1558.

Sixth Circuit - United States v Mayes (1975, CA6 Ky) 512 F2d 637, cert den 422 US 1008, 45 L Ed 2d 670, 95 S Ct 2629 and cert den 423 US 840, 46 L Ed 2d 59, 96 S Ct 69 and (ovrld on other grounds United States v Enright (CA6 Mich) 579 F2d 980).

See United States v Ridling (1972, DC Mich) 350 F Supp 90.[31]

Seventh Circuit - United States v Chastain (1970, CA7 Ind) 435 F2d 686; United States v Penick (1974, CA7 Ill) 496 F2d 1105, cert den 419 US 897, 42 L Ed 2d 141, 95 S Ct 177; United States v Infelice (1974, CA7 Ill) 506 F2d 1358, cert den 419 US 1107, 42 L Ed 2d 802, 95 S Ct 778, reh den 420 US 956, 43 L Ed 2d 433, 95 S Ct 1342; United States v Sweet (1977, CA7 Ill) 548 F2d 198, cert den 430 US 969, 52 L Ed 2d 361, 97 S Ct 1653; United States v Bursten (1977, CA7 Ind) 560 F2d 779.

Eighth Circuit - United States v Oliver (1975, CA8 Mo) 525 F2d 731, cert den 424 US 973, 47 L Ed 2d 743, 96 S Ct 1477; United States v Smith (1977, CA8 Mo) 552 F2d 257.

Ninth Circuit - United States v DeBetham (1972, CA9 Cal) 470 F2d 1367, cert den 412 US 907, 36 L Ed 2d 972, 93 S Ct 2299; United States v Alvarez (1973, CA9 Cal) 472 F2d 111, cert den 412 US 921, 37 L Ed 2d 148, 93 S Ct 2742; United States v Bagsby (1973, CA9 Cal) 489 F2d 725; United States v Watts (1974, CA9 Cal) 502 F2d 726; United States v Demma (1975, CA9 Cal) 523 F2d 981; United States v Marshall (1975, CA9 Cal) 526 F2d 1349, cert den 426 US 923, 49 L Ed 2d 376, 96 S Ct 2631.

United States v Urquidez (1973, DC Cal) 356 F Supp 1363.

Where a defendant advised the court in United States v Lanza (1972, DC Fla) 356 F Supp 27, affd (CA 5 Fla) 489 F2d 554, reh den (CA5 Fla) 491 F2d 1272 and cert den 421 US 909, 43 L Ed 2d 774, 95 S Ct 1558, that as a part of his defense he proposed to offer expert testimony on the results of a polygraph examination that had been administered to him, the court held that this was a matter within its discretion. The government objected to the admission of any evidence relating to the polygraph test, citing numerous decisions and noting that no federal court had admitted the results of a polygraph examination, but the court pointed out that the refusal to admit polygraph results was based on the failure of the proffering party to lay

a proper foundation for the testimony. Federal courts have noted that given an adequate foundation, it would be within the discretion of the trial judge whether to receive such evidence, and this view, rather than the per se rule urged by the government, was the correct approach to the question of admissibility.[32] After receiving evidence as to the reliability of polygraph tests and considering the results in defendant's case, however, the court rejected the evidence.

In United States v Mayes (1975, CA6 Ky) 512 F2d 637, cert den 422 US 1008, 45 L Ed 2d 670, 95 S Ct 2629 and cert den 423 US 840, 46 L Ed 2d 59, 96 S Ct 69 and (ovrld on other grounds United States v Enright (CA6 Mich) 579 F2d 980), the Court of Appeals held that the trial judge clearly acted within his discretion in refusing defendant's requests regarding polygraph examinations. It cited two of its own opinions, in one of which expert testimony concerning neutron activation analysis was admitted on the ground that it had gained general acceptance in its field, and in the other of which the admission of voice print analysis was held properly within the District Court's discretion; and then the court merely cited the Frye Case (supra, § 3) in which the court had refused to admit polygraph evidence for the reason that such evidence had not attained "general acceptance" in its field.

Defendants contended in United States v Infelice (1974, CA7 Ill) 506 F2d 1358, cert den 419 US 1107, 42 L Ed 2d 802, 95 S Ct 778, reh den 420 US 956, 43 L Ed 2d 433, 95 S Ct 1342, that the trial judge erred in denying motions for polygraph examinations of defendants and of a government witness, arguing that current practice and usage indicated the high scientific repute of polygraph testing. The court stated that the admission of such evidence was within the discretion of the trial judge as was the appointment of a polygraph examiner, and that the judge had discretion to deny the tests. The court noted that defendants cited no cases and it had found none which held that the refusal to order a polygraph examination was an abuse of discretion.

In United States v Smith (1977, CA8 Mo) 552 F2d 257, defendant contended that the trial court erred in excluding his proffer of polygraph evidence which he asserted would indicate that he was telling the truth. The government did not assent to the admission of this evidence, and the court said that under such circumstances the decision to exclude the proffered evidence was clearly within the discretion of the District Court.

In a per curiam opinion, the Court in United States v De Betham (1972, CA9 Cal) 470 F2d 1367, cert den 412 US 907, 36 L Ed 2d 972, 93 S Ct 2299, where the trial court had refused to receive polygraphic evidence beneficial to the defendant and where, as the Court of Appeals noted, the evidence at the hearing vigorously supported the accuracy of polygraphic evidence, nevertheless held that despite the strong showing made by defendant, it was not prepared to say that the trial judge abused his discretion in rejecting the offer, although, the court added, it was not holding that polygraphic evidence was never admissible.

* COMMENT: The Court of Appeals further stated in United States v De Betham, supra, that the record was convincing that the trial judge did not believe defendant in those instances where his testimony conflicted with that of the government witnesses, and that in these circumstances, the error, if any, in rejecting the polygraphic evidence beneficial to defendant would

be harmless. Counsel was no doubt surprised to read this statement of the Court of Appeals since the trial judge had held himself "constrained" by prior decisions of the Ninth Circuit Court of Appeals to reject the polygraph test results. Had the trial judge considered himself free to consider the polygraph evidence on which, as the Court of Appeals noted, defendant had made a "strong showing," there would have been some corroboration of defendant's testimony. While the judge still might not have believed defendant's story, his decision that precedent in the Ninth Circuit prevented him from considering polygraph evidence, if error, might seem to counsel to have prejudiced defendant by depriving him of this chance to bolster his credibility.

Prior to trial on narcotics charges, the defendant moved to introduce polygraph test results but the trial court denied the motion and the Court of Appeals affirmed in United States v Marshall (1975, CA9 Cal) 526 F2d 1349, cert den 426 US 923, 49 L Ed 2d 376, 96 S Ct 2631. The court said that its decisions indicated that expert testimony relating to polygraph tests might be admissible, yet its decisions gave the District Courts wide discretion in refusing to admit the testimony. The court continued by noting the polygraph's misleading reputation as a "truth teller," the widespread debate concerning its reliability, the critical requirement of a competent examiner, and the judicial problems of self-incrimination and hearsay, and said that a trial court would rarely abuse its discretion by refusing to admit the evidence, even for a limited purpose and under limited conditions.

§ 5. Test results deemed sufficiently reliable to warrant admission

Apart from those cases in which the courts found polygraph evidence sufficiently reliable for admission because of special circumstances (§ 6, infra), there is support for a more general view that a federal court may admit such evidence which it finds sufficiently reliable for consideration. In the following case, the District Court deemed evidence of a polygraph examination and its results sufficiently reliable for admission on the issue of defendant's guilt or innocence of an offense charged.

Affirming defendant's conviction on three counts of a four count narcotics indictment, the Court of Appeals in United States v Penick (1974, CA7 Ill) 496 F2d 1105, cert den 419 US 897, 42 L Ed 2d 141, 95 S Ct 177, noted that the trial court had at defendant's request authorized funds for a polygraph examination of defendant with respect to the first count of the indictment, and further authorized funds for the testimony of a polygraph operator who testified in open court. The stated purpose of the trial court in allowing defendant's attorney to engage in the experiment with respect to the first count only was that it involved a loosely controlled transaction with an informant which had not been subject to the scrutiny and control of federal narcotics agents as had the offenses of the other three counts. The trial court had stated that if the defendant could raise a reasonable doubt by subjecting himself to a polygraph test on this transaction, it would reconsider its findings of guilt on count one, and, after hearing the polygraph operator, the trial court found defendant not guilty of that count.[33]

§ 6. Particular circumstances warranting admission of test results

[a] Conditions imposed by court

The District Court in one case agreed to admit the results of a polygraph test of defendant into evidence for consideration by the jury, but imposed as a condition that the court would appoint its own polygraph expert to check on defendant's expert and to determine whether defendant was testable. The court held that under these conditions, so long as both experts agreed that defendant was testable, both would be allowed to testify even if they disagreed on the ultimate issue.

Defendant was charged with perjury, in United States v Ridling (1972, DC Mich) 350 F Supp 90, and indicated his intention to offer testimony of polygraph experts who, he said, would testify that he was telling the truth when he made the statements which were the basis of his indictment. The court ordered a pre-trial evidential hearing on the admissibility of the tests and the opinions of the polygraph experts, and held that, subject to certain conditions, the evidence would be admitted at the trial of the case. The court noted that this was the best case for testing the admissibility of polygraph testimony, because a perjury case was based on willfully or knowingly giving false evidence, and the experts all agreed that the polygraph examinations was aimed exactly at this aspect of truth. A subject, they said, might be honestly mistaken as to a fact, but if he answered according to his honest belief, the operator would interpret the results as being a truthful answer. The condition imposed by the court was that it would appoint its own polygraph expert to provide an independent check on the opinion of the defendant's expert and to make certain that the subject was testable. The court stated that in the event that its expert concluded positively that the subject was or was not telling the truth, the expert of the defendant and the expert of the court might be produced and give testimony; that in such case, if the court's experts and the defendant's experts both agreed that the subject was a person who could be tested appropriately, the testimony of each should be admitted even though they might disagree on the ultimate issue; and that if, on the other hand, the court's expert believed that it could not be determined whether or not the subject was telling the truth, the opinion of both experts should be rejected. This result, the court concluded, could be caused by the defendant's failure to cooperate with the court's appointed expert or because the defendant was not a person who could be tested, but in either event, doubt would be cast upon the validity of the testimony offered by the defendant and it would be rejected.

[b] Stipulation by parties

It has been held that if the defendant in a criminal case stipulates with the government as to the admissibility of polygraph examination results, they may be admitted in evidence whether the result is favorable or unfavorable to defendant.

United States v Oliver (1975, CA8 Mo) 525 F2d 731, cert den 424 US 973, 47 L Ed 2d 743, 96 S Ct 1477, involved the second trial of a defendant charged with rape. At defendant's first trial he had presented a polygrapher who testified that defendant was telling the truth, and the Court of Appeals in reversing and remanding on other grounds noted that on retrial no harm would be done the government by at least permitting defendant to try to lay a foundation for the admissibility of a polygraph test of defendant. Prior to the second trial, defense counsel filed a motion for permission to expend court funds to employ a certain acknowledged expert in the field of

polygraphy to administer an examination to defendant and to interpret the results, the defendant's prior test having been given by a less qualified examiner. The District Court granted the motion, and evidence of the results was introduced by the government. The Court of Appeals said that under the circumstances of this case in which the defense and the prosecution had stipulated to the government's right to offer the polygraph results in evidence, a discretionary rather than a per se exclusionary rule was appropriate. The Court of Appeals pointed out that pursuant to the stipulation, defendant, while represented by counsel, had agreed that the results of the test ordered by the court, even if unfavorable, could be offered in evidence by the government, and that he voluntarily agreed to submit himself to a polygraph examination by the expert he wanted. Ironically, the Court of Appeals continued, when the test was administered it indicated deception on behalf of the defendant. On appeal after his conviction, defendant contended that the District Court implicitly imposed as a condition of granting his motion for this polygraph examination at government expense the requirement that he agree that the government could offer the results of the examination, The Court of Appeals said that a person could waive constitutional rights, including the right against self-incrimination, and that defendant here assured the trial court that he had adequately discussed his decision with his lawyers, they also advising the court that he wished to take the test and understood that the results might be used even if unfavorable. It was obvious, the court noted, that defendant calculated that he could pass the test even though he did not ultimately do so, and his agreement as to the admissibility of the test could be looked upon as a deliberate bypass of his constitutional rights based on an exercise of trial strategy.

* CAUTION: In the Oliver Case, supra, it was contended that the state of the art of polygraph examinations had advanced to a level of reliability sufficient to make the test admissible in evidence, and the court noted decisions which had recognized that in a proper case polygraph evidence might be admissible. Given the unique circumstances of the instant case, the court stated, in which the admissibility of the results was stipulated,34 it was unnecessary to determine whether the polygraph had attained sufficient general scientific acceptance to justify the admission of polygraph results absent waiver or stipulation.

* COMMENT: Only one other federal case has been found in which defendant stipulated to the admission of a polygraph examination to be administered to him, and that was a civil case, Herman v Eagle Star Ins Co. (1966, DC Cal) 283 F Supp 33, affd (CA9 Cal) 396 F2d 427. Here, an insured had brought an action against his insurance company seeking recovery of the value of a ring which had mysteriously disappeared, and agreed to take a polygraph test under a stipulation with the insurance company that the results would be admissible in evidence. Since the results were in its favor, the insurance company introduced them at trial, and after an adverse judgment the insured moved for a new trial, but the motion was denied. The court noted that the insured's counsel made no objection to his client's taking the test, and that the attorney knew the terms under which it was being given, making no objection to use of the test in evidence or to the manner in which it was taken. Pointing out that no relief was sought from the stipulation at any time before trial, the court concluded that there was little doubt that the insured would have relied on the stipulation if the polygraph test results had been favorable to his position.

[c] Other circumstances

Under particular circumstances other than a stipulation between the parties or conditions imposed by the court, the admission of lie detector test results in a federal criminal trial has been held warranted. For example, fairness to the defendant was held to require the admission of test results in the following case.

Where a principal government witness, a narcotics dealer, had blurted out during cross-examination that he had taken a lie detector test, the court declared a mistrial, in United States v Hart (1971, DC NY) 344 F Supp 522, when it developed that the tests which had been requested by the government indicated that he was lying and that the government knew this before it put him on the stand. The defendants moved for admission of the results of this polygraph test at an evidentiary hearing to determine whether the government had violated its duty to disclose any evidence which might tend to exculpate the defendants, as required by decisions of the United States Supreme Court. The court said that evidence of lie detector tests was admissible for some purposes, that the defendants were entitled to inquire concerning any investigations made by the government which might have put them on notice that a government witness was untruthful, and that the bearing of the lie detector test on the witness' credibility should be determine by the jury, not at a prior evidentiary court hearing. The results of the tests which the government had its witness take, the court held, were admissible on behalf of the defendants because the government initially thought they were reliable enough to assist it in evaluating its own witness. The court directed that the government make available at trial as witnesses all persons who participated in the polygraph tests given its witness and in the decision that the results of the tests did not impair his credibility as a witness.

* CAUTION: The court in the Hart Case, supra, emphasized that its order did not constitute a change in the general rule forbidding a party to offer his own polygraph tests in evidence, and that with respect to evidence proffered concerning polygraph tests administered to the defendants, subsequent to their first trial and without affording the government an opportunity to observe them, it would not receive evidence of those tests at a second trial, because it was bound by precedent holding that such tests were not admissible.

§ Deficiency of particular test as warranting exclusion of results

In a number of cases, the courts have excluded evidence of polygraph examinations because of deficiencies they found in the qualifications of examiners, or in the administration of the test, or in the test itself.

Thus, where the issue before the court was a motion by defendant for permission to take a polygraph examination at government expense, the court in United States v Wilson (1973, DC Md) 361 F Supp 510, heard testimony by witnesses as to the use and reliability of polygraphy, but ultimately denied defendant's motion. The court found that the technique of polygraphy had progressed dramatically since the ruling of inadmissibility in Frye, supra § 3, and that the voluminous record before it reflected the improvements in the machines, the gains in knowledge, and the widespread use of polygraphy

by the law enforcement and business communities, advances which had prompted qualified admissions in some cases and, in some state cases, unqualified admissions. The court heard the expert witnesses called by the parties, and evaluated their expertise in light of its extensive reading of the writings and trial transcripts of the leading experts in the world. It found that while the experts and studies differed as to the capability of the polygraph industry to cope with the complexities of that field, none disputed the existence of these complexities. The court noted that in the present case the defendant's own witnesses on the general question of validity and reliability of polygraphy testified that the particular examination was inconclusive, but that they did so for different reasons. In ruling against admissibility, the court stated that it would not gainsay the usefulness of examinations conducted by leading experts in an investigative setting, but emphasized that even the experts admitted to varying degrees of error, compounded when one considered the proficiency of less qualified examiners.

The question on appeal in United States v Francis (1973, CA5 Tex) 487 F2d 968, cert den 416 US 908, 40 L Ed 2d 113, 94 S Ct 1615, arose with respect to sentencing, the trial judge before imposing sentence having before him a presentence report which contained the results of a polygraph test made in the absence of and without notice to the government counsel. The trial judge ruled that no consideration would be given to the polygraph test under these circumstances, also noting that it had been made without a showing of the identity or qualifications of the person making the test. The Court of Appeals, affirming, said that there might be situations where failure to consider a polygraph test would be error, but that this was not one of them.

The court denied defendant's motion, in United States v Lanza (1972, DC Fla) 356 F Supp 27, affd (CA5 Fla) 489 F2d 554, reh den (CA5 Fla) 491 F2d 1272 and cert den 421 US 909, 43 L Ed 2d 774, 95 S Ct 1558, to receive in evidence at his trial on gambling charges the results of a polygraph examination he had taken. The court examined the polygraph test administered defendant by a person "generally acknowledged as a leading authority in his field," and concluded that his opinion as to defendant's truthfulness when he denied participation in the gambling operation was inconclusive. The court pointed out that after a few preparatory questions, defendant was asked two questions concerning his involvement in this case and gave "clouded responses," the questions then being rephrased by the examiner in language chosen by the defendant himself, on the basis of his response to which the expert concluded that he told the truth. Further, the court continued, when the polygraph examination was administered none of the information concerning the facts at issue was made available to the expert and he knew none of the details of the gambling operation, but the examiner had testified on cross-examination that an examiner ought to have all the available facts and circumstances giving rise to the charge against his subject before administering a lie detector test. The court concluded that defendant's proffer was not sufficient to justify the admission in evidence of the results of the polygraph examination.[35]

In United States v Oliver (1975, CA8 Mo) 525 F2d 731, cert den 424 US 973, 47 L Ed 2d 743, 96 S Ct 1477, the trial court admitted on behalf of the government the results of a lie detector test which defendant and his counsel had stipulated might be used at trial, whether favorable or not (§ 6 [b],

supra.) At the same time, the trial court had excluded the testimony of another polygraph expert who had previously tested defendant with a favorable result. The Court of Appeals affirmed both rulings, noting with respect to the defendant's expert that his qualifications as a polygraphist were minimal, especially when compared to those of the expert called by the government, and that expert testimony concerning polygraph results demanded more than minimal qualifications. This was demonstrated, the court said, by the fact that defense counsel had selected the polygraph expert to the use of whose testimony he had stipulated. Even more significant, the court pointed out, was the fact that defense counsel informed his expert prior to administration of the first test that he should not examine the defendant about anything on the offense alleged, indicating that the defendant was afraid he would "blow the hot question," referring to the offense. The limitations imposed by the defense seriously undermined the reliability of the test conducted by that expert, the court concluded, and under the circumstances the exclusion of his testimony was not an abuse of the trial court's discretion.

In United States v Demma (1975, CA9 Cal) 523 F2d 981, a defendant convicted of conspiracy to import narcotics, who relied chiefly on the defense of entrapment by government agents, contended that the District Court had abused its discretion in refusing to admit polygraphic evidence, the substance of which was that a qualified expert had questioned him about his intent to import and that, truthfully in the expert's opinion, the defendant had denied that intent and had explained that he was co-operating in narcotics dealing in order to have modified the punishment adjudged against his father for narcotics dealing. The District Court excluded the evidence because its probative force was seriously diminished by the lapse of time between the occurrence of the events and the taking of the test. The Court of Appeals affirmed on this point, saying that it had generally been inhospitable to contentions that a District Court had abused its discretion in refusing to admit polygraphic evidence.

Defendant charged with the sale of narcotics testified to facts supporting her defense of entrapment, in United States v Urquidez (1973, DC Cal) 356 F Supp 1363, and a narcotics agent denied the conduct she asserted. Her counsel wanted to introduce a polygraph test the results of which confirmed the truth of her testimony but the government opposed the motion, and the court decided that since this was a nonjury case and there was a complete lack of evidence on entrapment except the contradictory testimony of the two individuals, it should consider the reliability of the results of lie detector tests. After 3 days of testimony, he granted the government's motion to strike all evidence concerning the results of the examination of defendant, noting particularly the dispute between the experts for each side as to the appropriateness of the control questions. One of these control questions, for example, involved whether the defendant had lied to her priest, and this, the court said, inspired at the hearing a vigorous controversy as to whether religious matters should be injected into a control question. The court also pointed out that although there was expert testimony indicating that all qualified polygraph examiners would interpret a chart in the same manner, this did not happen in this case, the defendant's experts reading the responses to the relevant questions as indicating nondeception, while the government's expert found the same responses to indicate deception, the latter also testifying

that the whole test was invalidated by the control questions. The court concluded that even if the results of the polygraphic examination here were to be received in evidence, the amount of reliance that could be placed upon them would not overcome the court's conclusions upon hearing the testimony of the witnesses on the entrapment issue.

§ Lack of adequate foundation warranting exclusion of particular test results

Courts approving the exclusion of polygraph evidence have in a few cases relied at least in part on the offering party's failure to have laid an adequate foundation for the admission of such evidence.

Thus, in United States v Chastain (1970, CA7 Ind) 435 F2d 686, in which defendant urged that the trial court had erroneously refused to admit into evidence the results of a polygraph test, the Court of Appeals held that defendant had not laid a proper foundation for the proffered testimony, and that in this situation it was clearly within the discretion of the trial judge to exclude such evidence.

See also United States v Francis (1973, CA5 Tex) 487 F2d 968, cert den 416 US 908, 40 L Ed 2d 113, 94 S Ct 1615, supra § 7, where polygraph test results were excluded because there was no showing of the qualifications of the particular examiners.

Defendant's failure to lay a predicate for the admissibility of polygraph evidence was held in United States v Wainwright (1969, CA10 Colo) 413 F2d 796, cert den 396 US 1009, 24 L Ed 2d 501, 90 S Ct 566, to render the argument that such tests had greatly advanced in reliability of no force in this case, warranting the trial judge's exclusion of such evidence. Defendant had taken a polygraph test and furnished the government with the results, offering to take another test administered by a government expert. The court noted that the primary purpose for this proffer was not as direct proof of his innocence of willfully attempting to evade income taxes but to reflect his subjective intent, an essential element of the crime charged. The thrust of defendant's argument was that in recent years the "state of the art" of polygraph testing had improved to the point that the accuracy of such tests equaled that of such commonly admissible evidence as results of handwriting tests, psychiatric opinion evidence, and alcohol blood tests, but the court said that leaving this to one side, no judgment could be made without relevant expert testimony relating to the probative value of such evidence. Defendant totally failed to supply the condition that before such evidence may be admitted, an expert must testify that the proposed test is an accepted one in his profession, and that it has a reasonable measure of precision in its indications, the court concluded, and the trial court properly excluded it even though in a proper case it might be admissible.

In United States v Russo (1975, CA10 Kan) 527 F2d 1051, cert den 426 US 906, 48 L Ed 2d 831, 96 S Ct 2226, reh den 427 US 913, 49 L Ed 2d 1204, 96 S Ct 3201, defendant had at his own expense undergone a lie detector test and he sought to have the results introduced at his upcoming trial. The trial court suggested that counsel for defendant make an offer of proof to assist in any final determination as to whether there should be a full hearing on the question of the admissibility of such evidence in the Tenth Circuit, but when the case ultimately came on for trial and the trial court on

the first day of trial denied defendant's motion for a hearing. Later a formal offer of proof was made by counsel and denied. In affirming, the Court of Appeals said that in addition to being untimely filed, the offer was itself insufficient to require the trial court to hold a full-scale evidentiary hearing into the matter. The court noted that while it had said in an earlier case that conceivably the results of a polygraph test might at some future date constitute admissible evidence, it had also said that before such evidence could be admitted there must be a showing that the proposed test was an accepted one in the profession, and that it had a reasonable measure of precision in its indications. The belated offer of proof in this case did not meet the requirements, the court stated, and was not such as to have compelled the trial court to hold an evidentiary hearing on the matter.

The trial court's rejection of questions concerning a lie detector test about which there was no showing as to reliability and utility of the particular test was approved in United States v Bagsby (1973, CA9 Cal) 489 F2d 725, where a government witness who had been arrested with the defendants when they were apprehended for importing narcotics had taken a lie detector test the results of which were inconclusive since he neither passed nor failed the examination. The Court of Appeals pointed out that counsel for defendants, without laying a foundation as to any aspect of the alleged polygraph examination taken by the government witness, "cunningly" asked as his first question on cross-examination, "With regard to your testimony in this case, isn't it a fact that recently you were unable to pass a lie detector test?" Defendants on appeal claimed that sustaining an objection to this question was error, not because the results of the tests impeached the witness' veracity, but because the fact of his having taken the examination was relevant to his state of mind about deciding to testify. The court said that this was an attempt to add a new wrinkle to the use of polygraph examinations since whether the witness passed or failed the examination became irrelevant. Instead, the court noted, the mere taking of the examination itself was advanced for the purpose of attacking credibility by inferring therefrom a motive to testify falsely, and there was no abuse of the trial court's discretion in rejecting the introduction of the polygraph evidence.

§ Introduction of collateral issues warranting exclusion of test results

In the following cases, the courts denied admission, or approved exclusion, of polygraph evidence for the reason that issues collateral to defendant's guilt or innocence would be introduced into the trial which were time-consuming, potentially prejudicial, or possibly confusing.

Thus, where the District Court refused to permit defendant to lay a foundation for admitting polygraph evidence, the Court of Appeals nevertheless approved its action in United States v Flores (1976, CA9 Cal) 540 F2d 432. Defense counsel had made an offer of proof at a suppression hearing resulting from a search and the seizure of certain articles, counsel specifying the scientific foundation for reliability of polygraph examinations, and seeking to offer at the suppression hearing evidence which would show that defendant's answers were truthful in regard to contested issues. The trial court rejected the offer on the ground that (1) too much time would be expended in the foundational hearing; (2) too many collateral issues would be raised; and (3) the art of the polygraph had not reached a state

of reliability. The Court of Appeals affirmed, noting that it had held that the proponent of such evidence had the burden of establishing a proper foundation showing that the evidence was reliabile, but that it had also held that even if a proper foundation was laid a court could refuse to admit polygraph evidence if it would inject a time-consuming, potentially prejudicial, and, perhaps, confusing collateral issue into the trial. The Court of Appeals concluded that while the trial court had refused to permit defendant to lay a foundation, its ruling comported with the principles that had been laid down.

Affirming the District Court's rejection of polygraph evidence, the Court of Appeals in United States v Marshall (1975, CA9 Cal) 526 F2d 1349, cert den 426 US 923, 49 L Ed 2d 376, 96 S Ct 2631, noted its own earlier decision that the proponent of polygraph evidence had the burden of laying a proper foundation showing the underlying scientific basis and reliability of the expert's testimony, but stated that even if a proper foundation can be laid, a District Court can consider that introduction of the polygraph evidence will inject a time-consuming, potentially prejudicial and, perhaps, confusing collateral issue into the trial.

The District Court in United States v Urquidez (1973, DC Cal) 356 F Supp 1363, was confronted by a direct conflict in the testimony of narcotics agents and the defendant who testified to facts showing that she had been entrapped into selling the narcotics to the agent. Her counsel advised the court that she had taken a polygraph test and that the results confirmed the truth of her testimony, requesting that the court receive evidence concerning the test and its results; the government opposed the motion and added that it could present a polygrapher who would testify that the test did not support the defendant's truthfulness. The court said that the contradictory testimony and the fact that a jury had been waived made this a favorable opportunity to consider whether polygraphic evidence should properly be received in furtherance of resolving this evidentiary conflict. The court then spent 3 days hearing testimony that there were many variables, other than the ultimate question of truth of falsity, that could influence the results of a polygraph test, and said that it was precisely this sort of controversy which created the danger that on the introduction of such evidence a trial could descend into a battle of experts on the probative value of the polygraph test rather than a determination of the guilt or innocence of a defendant. The experience of this case, the court observed, had amply shown that the validity of a polygraphic test was dependent upon a large number of variable factors, many of which would be very difficult, and perhaps impossible to assess, so that a given case the time required in order to explore and seek to adjudge such factors would be virtually incalculable. The court said that it was impelled to the conclusion that the administration of justice simply could not tolerate the burden of litigation inherently involved in such a process, and granted the government's motion to strike all evidence concerning the results of the polygraphic examination of the defendant.

Footnotes:

[1]The polygraph is based on the principle that the autonomic nervous system will respond to stressful conditions and that sympathetic parts of that system will respond involuntarily. These parts of the system are not controllable. A lie is an emergency to the psychological well being of a person and causes stress. Attempts to deceive cause the sympathetic branch

of the autonomic nervous system to react and cause bodily changes of such a magnitude that they can be measured and interpreted. See United States v Ridling (1972, DC Mich) 350 F Supp 90.

[2]For example, after hearing several days of testimony as to the admissibility and reliability of the results of lie detector tests, the court in United States v Urquidez (1973, DC Cal) 356 F Supp 1363, found too many variables and conflicts to accept the results of the tests in this case, but said that it had become convinced that the polygraph art undoubtedly had many valid uses since its principal objective was to provide a means for ascertaining the truth, which was in harmony with the goals of the judicial process. The physiological and technical assumptions upon which it relies appear to be valid, the court pointed out, and it might well be that further developments and refinements in the utilization of the polygraph might some day merit its being accorded a place in a court proceeding.

[3]Professor Wigmore was receptive to the use of scientific experimental tests in court, with expert testimony that the test was accepted in the profession and had a reasonable measure of precision in its indications, and referred in the same spirit to the newly emerging "lie detector." See 3 Wigmore on Evidence §§990, 999.

[4]In United States v Alexander (1975, CA8 Minn) 526 F2d 161, the defendant contended in support of his claim of error in the trial court's refusal to admit the results of a polygraph test he had taken, that there was a perceptible trend toward admissibility of polygraph evidence, and that the Court of Appeals should take cognizance of it. The court said it was true that a limited number of Federal District Courts had sanctioned the admission of such evidence in certain situations and under limited circumstances, but that the disposition of these particular cases on appeal would dispel any conception of a "trend" toward unqualified admissibility in federal courts at the present time.

[5]In 1964, the Committee on Government Operations of the House of Representatives conducted several days of hearings on the use of polygraphs by the Federal Government, and heard testimony from pre-eminent polygraphists, psychiatrists, psychologists, psychophysiologists, and other witnesses who were able to attest to the operation and accuracy of polygraphs. In its report, the Committee concluded that there is no "lie detector." The polygraph machine is not a "lie detector," nor does the operator who interprets the graphs detect "lies," the Committee said, since the machine records physical responses which may or may not be connected with an emotional reaction, and that reaction may or may not be related to guilt or innocence. The Committee asserted that many physical and psychological factors made it possible for an individual to "beat" the polygraph without detection by the machine or its operator, and that people have been deceived by a myth that a metal box in the hands of an investigator can detect truth or falsehood. HR No. 198, 89th Cong 1st Sess 13 (1965).

An examiner cannot detect deception if the subject is unresponsive in character or nature; or if the subject has no fear of detection because of a fatalistic attitude, rationalization of his behavior, "circumscribed amnesia," or a condition of shock or exhaustion. In addition, the polygraph cannot be used successfully on pathological liars, children, the mentally dull, or other subjects who are unable to distinguish between truth and falsehood. Highleyman, The Deceptive Certainty of the "Lie Detector," 10 Hastings LJ 47 (1958).

[6]For example, in United States v Gloria (1974, CA5 Tex) 494 F2d 477,

reh den (CA7 Tex) 496 F2d 878 and cert den 419 US 995, 42 L Ed 2d 267, 95 S Ct 306, where the trial court had excluded from evidence the results of a polygraph test taken by defendant which were favorable to his credibility; the Court of Appeals found no error, saying that it was not persuaded to reverse the rule of exclusion of such evidence. The American courts have traditionally held such evidence inadmissible in criminal proceedings on behalf of either the prosecution or defense, the court stated, because the polygrph has not yet been accepted by the courts as a scientifically reliable method of ascertaining truth or deception.

And in United States v Alexander (1975, CA8 Minn) 526 F2d 161, the court approved rejection of polygraph evidence on the grounds that it had not achieved scientific acceptibility, and that it was not sufficiently reliable in ascertaining truth.

[7]Usurpation of the jury function by a machine has often been noted by courts disallowing polygraph evidence. See, for example, United States v Wilson (1973, DC Md) 361 F Supp 510. The court expounded upon the matter in United States v Alexander (1975, CA8 Minn) 526 F2d 161, in which it observed that apart from doubts about the reliability of polygraphy at this stage of the art, a primary concern is the effect that such evidence will have on juries provided that the polygraph attains the degree of scientific acceptability and reliability which would allow its admission in evidence. When polygraph evidence is offered in evidence at trial, the court said, it is likely to be shrouded with an aura of near infallibility, and based upon an examiner's presentation of the background of this particular form of scientific evidence, present-day jurors, despite their sophistication and increased educational levels, are still likely to give significant, if not conclusive, weight to a polygraphist's opinion as to whether the defendant is being truthful or deceitful in his response to a question bearing on a dispositive issue in a criminal case. To the extent that the polygraph results are accepted as unimpeachable, the court asserted, despite cautionary instructions by the trial judge, the jurors' traditional responsibility to collectively ascertain the facts and adjudge guilty or innocence is preempted.

[8]United States v Urquidez (1973, DC Cal) 356 F Supp 1363, the court having spent 3 long days listening to experts dispute the variables affecting the validity of tests.

[9]Courts in other circuits, too, have noted the burden on judicial time. See, for example, United States v Wilson (1973, DC Md) 361 F Supp 510.

[10]United States v Wilson (1973, DC Md) 361 F Supp 510. The court noted that the proponents of admissibility of polygraph examinations suggested that a jury could properly access the competence and merit of the testimony of an examiner subjected to cross-examination, but said that this contention was of dubious validity, as a rule, because the cross-examination of an expert posed a formidable task.

In United States v Brown (1971) 149 App DC 43, 461 F2d 134, a justice dissenting from the majority's holding that the in-court identification of the defendants was admissible, pointed out that identifications were often unreliable, perhaps consistently less reliable than lie detector tests, which the court had in the past excluded for unreliability. The difference between the court's approach to polygraph tests and to identification is, no doubt, attributable at least in part to the perceived differences in the need

for the information, he emphasized, there being no difficulty conceiving of a criminal process that operated without the aid of lie detectors, even if it were assumed that lie detectors might in some instances enhance the process, but there being no way to see how the process could operate without identifications, and these the courts bravely assume the jury is capable of evaluating as to reliability.

[11]The court also rejected arguments based on self-incrimination in holding that results of polygraph tests given defendant would be admitted if he agreed to take them and if his and the court's experts agreed that the subject was testable; rejected the argument that the jury would be displaced by a machine or by a polygraph examiner, and held that the opinion of a polygraph expert was not hearsay, or that if it were, it should be admitted as an exception to the hearsay rule because of its high degree of trustworthiness.

[12]Rule 401 defines "relevant evidence" as meaning evidence having any tendency to make the existence of any fact that is of consequence to the determination of the action more probable or less probable, and Rule 404 permits an accused to introduce evidence of a pertinent trait of his character. Rule 608 provides that the credibility of a witness may be supported by evidence in the form of opinion, subject to the limitations that the evidence may refer only to character for truthfulness or untruthfulness, and that evidence of truthful character is admissible only after the character of the witness for truthfulness has been attacked by opinion. And perhaps most significant, Rule 702 permits testimony of an expert to assist the trier of fact to understand the evidence and to testify in the form of an opinion, while Rule 704 provides that testimony in the form of an opinion or inference otherwise admissible is not objectionable because it embraces an ultimate issue to be decided by the trier of fact.

[13]A successful test in terms of determining truth or falsity of responses depends upon the examinee's trust in the examiner and the test itself. The polygraph examination begins with a pretest interview between the examiner and the subject, the purposes of such interview being to enable the examiner to gain the confidence of the subject, to cause the latter to believe that the test will reveal a lie, and to motivate him to participate seriously in the testing process. In order to enhance such belief and motivation, the examiner usually demonstrates the "infallibility" of the polygraph by conducting what is known as a "stim" (stimulation) test. This normally involves having the subject select one of several numbered cards. He is then "hooked up" to the polygraph and is asked, in turn, whether he selected the respective numbers and is instructed to answer "no" to all such questions, including the one that should in truth be answered "yes." He is then shown how the polygraph has registered a comparatively larger and thus "telltale" reaction to his "lie." See United States v Urquidez (1973, DC Cal) 356 F Supp 1363.

[14]See the court's observations in United States v Alexander (1975, CA8 Minn) 526 F2d 161.

[15]Second Circuit - United States v Hart (1971, DC NY) 344 F Supp 522.

Fourth Circuit - United States v Wilson (1973, DC Md) 361 F Supp 510.

Fifth Circuit - United States v Lanza (1972, DC Fla) 356 F Supp 27, affd (CA5 Fla) 489 F2d 554, reh den (CA5 Fla) 491 F2d 1272 and cert den

421 US 909, 43 L Ed 2d 774, 95 S Ct 1558.

Sixth Circuit - United States v Ridling (1972, DC Mich) 350 F Supp 90.

Ninth Circuit - United States v Urquidez (1973, DC Cal) 356 F Supp 1363.

Dist Col Circuit - United States v Zeiger (1972, DC Dist Col) 350 F Supp 685, revd per curiam 155 App DC 11, 475 F2d 1280.

[16]See United States v Penick (1974, CA7 Ill) 496 F2d 1105, cert den 419 US 897, 42 L Ed 2d 141, 95 S Ct 177, affirming the judgment of the District Court.

[17]See United States v Hart (1971, DC NY) 344 F Supp 522.

[18]State v Harrison (1977) 90 NM 439, 564 P2d 1321.

See United States v Oliver (1975, CA8 Mo) 525 F2d 731, cert den 424 US 973, 49 L Ed 2d 743, 96 S Ct 1477, infra § 6[b].

[19]See United States v Bursten (1977, CA7 Ind) 560 F2d 779 (unreliable and self-serving).

[20]See State v McDavitt (1972) 62 NJ 36, 297 A2d 849.

[21]See People v Reeder (1976) 65 Cal App 3d 235, 135 Cal Rptr 421.

[22]See United States v Oliver (1975, CA8 Mo) 525 F2d 731, cert den 424 US 973, 47 L Ed 2d 743, 96 S Ct 1477, infra § 6 [b].

[23]See People v Barbara (1977) 400 Mich 352, 255 NW2d 171 (although the state of polygraphy did not warrant the introduction of polygraph tests into evidence in a trial, nevertheless, the character of the proceedings on a motion for a new trial because of newly discovered evidence was so significantly different from trial proceedings as to permit use of polygraphy in the former, yet deny its use in the latter).

[24]See McCroskey v United States (1965, CA8 Mo) 339 F2d 895 (the result of a polygraph test of the defendant himself hardly qualifies as evidence newly discovered since the trial, or as evidence not earlier available by the exercise of proper diligence, the defendant at all times having been at hand to assist his own cause).

[25]In most cases, the test results offered were those of defendants themselves, but some courts have applied the rule to test results of others appearing as witnesses. No case has been found in which a United States attorney sought to establish the credibility of his witnesses by the introduction of a polygraph test showing the witnesses' veracity, and judicial approval of character evidence in this situation is not likely in the foreseeable future. See § 2 [a], supra.

[26]In an earlier case, United States v Bando (1957, CA2 NY) 244 F2d 833, cert den 355 US 844, 2 L Ed 2d 53, 78 S Ct 67, the Second Circuit Court of Appeals, while deciding a different matter, observed that proof of a lie detector test was generally considered inadmissible.

[27]The court said in Wainwright that evidence of the results of a polygraph test might at some future date constitute admissible evidence upon a showing of the probative value of such evidence.

[28]In Russo, defendant's offer of proof of reliability of polygraph tests was held untimely and insufficient to have required that the trial court hold an evidentiary hearing on the admissibility of his polygraph evidence, and the court added that there would have to be "a strong showing" before such evidence could be admitted.

[29]In United States v Frogge (1973, CA5 Tex) 476 F2d 969, cert den 414 US 849, 38 L Ed 2d 97, 94 S Ct 138, the Court of Appeals noted that a trend might be emerging towards loosening the restrictions on polygraph evidence, but that the rule was well established in federal criminal cases that the results of lie detector tests were inadmissible.

[30]In remanding for a new trial on other grounds, the court in United States v Oliver (1974, CA8 Mo) 492 F2d 943, later app (CA8 Mo) 525 F2d 731, cert den 424 US 973, 47 L Ed 2d 743, 96 S Ct 1477, noted that no prejudice to the government could flow from allowing the defendant an opportunity to at least attempt to lay a foundation for the admissibility of a polygraph test of defendant at trial. The court said that while it had in the past held such tests inadmissible, recent court decisions had found under certain circumstances a polygraph examination to be admissible.

[31]Judicial opinions on the admissibility of polygraph testimony seem all to point toward exclusion, the court noted in the Ridling Case, but saying that they were not persuasive in so far as they were predicated on the unreliability of the polygraph. This is a question to be determined in each case, the court stated.

[32]But see decisions of the Fifth Circuit Court of Appeals supra § 3, expressing a contrary view.

[33]On appeal, defendant asserted that his constitutional right to due process was violated since the trial court refused to authorize funds for his polygraph examination as to the other three counts, and for obtaining expert testimony to establish the reliability of such evidence, but the Court of Appeals held that it was clearly within the discretion of the trial judge to exclude such evidence (§ 4, supra) and that the trial court did not abuse its discretion in refusing to authorize the additional funds.

[34]Defendant did not take the stand at his second trial following his unfavorable experience with the polygraph expert he had selected, and the Court of Appeals did not refer to the possible irrelevance of the results of this polygraph examination, defendant not having placed his credibility in issue. The matter of relevance could arise in the absence of a stipulation, as in United States v Cochran (1974, CA5 Fla) 499 F2d 380, reh den (CA5 Fla) 502 F2d 1168 and cert den 419 US 1124, 42 L Ed 2d 825, 95 S Ct 810, where one of the defendants charged with a flim-flam scheme sought to introduce the results of a polygraph test given to an unindicted coconspirator in the scheme who had written down this defendant's vehicle license number, leading to defendant's arrest. It was contended that the polygraph test would show that this conspirator who was not called as a witness was lying, but the court said that, not being a witness, he was not the subject of impeachment.

Or the issue of relevance could arise if the polygraph test results were favorable and defendant wanted to use them while remaining silent. To meet the potential problem of the defendant's using favorable polygraph

evidence in lieu of taking the stand, one writer has suggested that the government's interests could be protected by conditioning admissibility on the defendant's taking the stand. The rationale is that only by doing so does the defendant place his credibility in issue, thereby making the polygraph evidence relevant to the case at hand. See Kaplan, The Lie Detector: An Analysis of Its Place in the Law of Evidence. 10 Wayne LR 381 (1964).

[35]The court pointed out that the questioning of the polygraph examiner boiled down to, "Did you give money to Harlan Blackburn for the operation of illegal gambling activities?" that that was the question that prompted the clouded response, and that when the defendant suggested rephrasing the question to, "For illegal purposes, did you give money to Harlan Blackburn?" the examiner complied. The court said that the defendant's substituted question was as ambiguous, if not more so, than the question the examiner originally posed, and that the thrust of the query was whether the defendant "gave" any money to Blackburn, not whether he "loaned" any money, the examiner admitting that the defendant had voiced concern about the original question by stating that he did loan the money to him but didn't do it for gambling purposes.

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LIE DETECTORS

Their History and Use

A Review

By

Clarence H. A. Romig

Block, Eugene B. Lie Detectors: Their History and Use. New York, David McKay Company, Inc., 1977, 211 pp.

The detection of lies has been practiced throughout history, sometimes to satisfy personal inquisitiveness, but more often to resolve the conflict of information that might find an individual accountable for a criminal act. In Lie Detectors: Their History and Use, Eugene B. Blockhas provided a compendium of lie detector cases that span the application of the modern technique from its use in police investigations through recent day higher court decisions. This book does not purport to be a basic text for prospective polygraph examiners; rather it is a collection of cases that very broadly describe how lie detection has been employed to vindicate the innocent as well as to identify the guilty. Yet this book should be of special interest to every practicing polygraphist, because it provides documentary evidence of some very informative, some bizarre, and some unique cases that would otherwise remain untold.

Eugene B. Block is not a writer new to the field of law enforcement or criminalistics. He has written extensively about crime and criminals and has had books published about fingerprints, voiceprints, and the use of hypnosis in law enforcement. He is, therefore, able to effectively use the appropriate jargon in a book such as this. Still, the reader need not be apprehensive about the book being written in strictly technical terminology, because it is written for the layman to read, understand, and to enjoy.

The introductory part of this book is a series of chapters that describe the application of instrumentation to recording physiological responses to crime related questions. The very first chapter vividly describes how three luckless persons were wrongly accused of offenses and were vindicated by polygraph examinations. Thereafter, chapters containing some of the history of modern lie detection range from Cesare Lombroso's crude experiments through a present day listing of Who's Who in Polygraphy.

The second section is likewise a series of fascinating lie detector cases, some celebrated, others nondescript but no less interesting.

The too brief concluding section scantily refers to the congressional probe of the polygraph, the armed forces use of the polygraph, and a look into the future. Perhaps this latter section was kept short intentionally, because the earlier part of the book reported actual cases, and the topics in this latter section would depart too strongly from the original thesis or goal of the book. Regardless, more could have been related about the extensive training that is offered by the armed forces polygraph school and others, and the large number of states that have enacted legislation to help

in the professionalization of the polygraph field.

A reviewer has the responsibility to point to blatant errors as well as to extoll the virtues of the book being reviewed. On the error side, one must list a poor description of the function of the GSR and the rather naive report of the author's involvement in a polygraph demonstration as cited in Chapter 3. But, most seriously and perhaps the items that will be misconstrued by the lay reader, are the references to polygraph examinations where the examinee was asked for lengthy answers, or where the written dialogue indicated that the examiner rattled off rapid fire questions or asked a volley of questions. Few examinations, if any, are made asking for lengthy answers, and spacing of 15 or more seconds between questions does not constitute rapid fire or a volley.

On the plus side one must list the readable style, the judicious selection of representative case material, and a lack of noticeable bias. Especially noteworthy is the chapter containing the case involving the vindication of a person who had been convicted primarily due to fabricated fingerprint evidence. The message in that one chapter points out that even fingerprint evidence is not infallible and should stand the test of independent investigation. The polygraph's value, in that respect, has been proven.

Lie Detectors: Their History and Use should be in the library of every practicing polygraphist.

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EMPLOYEE THEFT INVESTIGATION

A Review

By

Norman Ansley

Barefoot, J. Kirk. Employee Theft Investigation. Los Angeles: Security World Publishing Company, Inc, 1979, 232 pages, indexed, appendix with forms. Available from Butterworth Publishing Company, Inc., 10 Tower Office Park, Woburn, Massachusetts 01801.

This is an excellent book with clear and precise directions and explanations. This is not a theoretical text, nor is it concerned beyond practical necessity with the fine points of law or administrative procedure. It is an excellent primer for the student or new security officer, and a worthwhile book for a manager or store owner who wants a general understanding of the problems and operations of security personnel.

The book covers a wide range of topics, including inventory shortages, facility inspections, use of undercover agents, surveillance, arrests, interrogations, evidence recovery, and the role of the polygraph.

Past APA President J. Kirk Barefoot has more than 25 years of experience in this specialty. His book displays this experience in the many fine

points that are missing from most security texts. Each of the chapters have just enough cases and anecdotes to illustrate the main points, without burdening the text with war stories.

Every polygraph examiner in private practice will benefit from reading this book. I agree with the summary of the foreword by Richard D. Paterson (also a past President of the APA), that this book "offers a sophisticated, pragmatic and credible resource for the senior business executive, the academic community, and the security practitioner.

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A B S T R A C T S

Employment

Sackett, Paul R. and Decker, Phillip J. "Detection of Deception in the Employment Context: A Review and Critical Analysis," Personnel Psychology 32 (1979): 487-506.

Empirical research on the validity of the polygraph, voice stress analysis, and paper and pencil instruments as mechanisms for the detection of deception is reviewed. It is noted that while these devices have their greatest use in the employment context, virtually all research has been done in an actual or simulated criminal investigation context. Three separate uses of devices for the detection of deception in the employment context are identified, namely, pre-employment screening, periodic screening of current employees, and investigation into a specific theft. Differences between each of these uses and the criminal investigation context are identified, and issues limiting the generalizability of research findings from one context to another are raised. Among the issues are the effects of a low base rate of guilt on accuracy, the effects of making multiple judgments on overall accuracy, and the potential for racial or ethnic bias in judgments of guilt or innocence. [author abstract.]

Motivation

Takeshi Wakamatsu, "Effects of Motivating the Suspect to Deceive the Polygraph Test," Reports of the National Research Institute of Police Science 29 (2)(May 1976): 99-186. Text in Japanese, abstract in English.

To investigate the effects of manipulation, 60 experimental subjects were divided into 3 groups and were tested under a mock crime paradigm, and were instructed to deceive the polygraph by suppressing any indication of deception.

For the first trial, the groups were not instructed in specific deception techniques.

For the second trial, the techniques presented in table 6 were explained to all subjects.

The motivation for the deception was as follows: The first group of

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subjects received 1000 yen if they could defeat the test, if they failed, they were punished. The second group was merely encouraged to deceive the operator. The third group was not given any motivation to deceive.

GSR and heart rate were recorded.

After the second trial, the first group of subjects revealed the critical items of the test to the examiner, and other two groups were confessed their stolen amount of money, and in the subsequent trial GSR responses and heart rate decreased.

The two groups who were motivated, showed significantly greater GSR responses and more instances of increased heart rate during the test than the unmotivated group.

The technique of the subject "Keeping his eyes on one point in front of himself and concentrating his mind on it was most effective to suppress deception."

This result suggests that this technique may be effective in field examinations, because it may suppress deceptions by criminal suspects. [author abstract.]

Speech

Fry, D. B. The Physics of Speech. New York: Cambridge University Press, 1979. 154 pp., 4 tables, 53 line diagrams. $19.95 cloth, $6.95 paper. Cambridge University Press, 32 East 57th Street, New York, New York 10022.

The mechanism of speech is a very complex one and in order to undertake any analysis of language it is important to understand the processes that go into making up the message that a speaker transmits and a listener receives. Professor Fry describes the impulses to muscle movements to sound waves, and vice versa, as the message is received and decoded. He then gives the basic physical principles involved in the generation and propagation of sound energy and in the phenomenon of resonance. These principles are applied to the speech mechanism itself and to the particular kinds of sound which constitute speech. There is a fully illustrated account of the use of the sound spectrograph in acoustic analysis and chapters dealing with the acoustic features of English sounds and with the way we recognize speech sounds by the acoustic cues inherent in a particular language. [author abstract.]

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I believe that it is better to tell the truth than a lie. I believe it is better to be free than to be a slave. And I believe it is better to know than be ignorant.

H. L. Mencken.

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I N D E X

Volume 8

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