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Lontents	
Effects of Diazepam and Methylphenidate on the Electrodermal Detection of	
Guilty Knowledge	
William G. Iacono, Guy A. Boisvenu and Jonathan A. Fleming	297
Guidelines for Understanding Nonverbal Behavior	
Murlene "Mac" McKinnon	313
Why Errors Occur	
Robert B. Peters	321
The Question of the Intent Question	
Stanley Abrams	326
The Importance of Listening in the Interview and Interrogation Process	
Edgar M. Miner	333
Historical Reprint (1936): A Recording Psychogalvanometer	
Rev. Walter G. Summers, S.J.	340
Book Summary	Jennie
Gordon H. Barland - Nektere Problemy Soudni Psychiatrie	346
Book Reviews	
Ronald M. Furgerson - Chemistry and Crime	348
Gordon H. Barland - Forensic Hypnosis	349
Gordon H. Barland - Hypnosis and the Law	350
Norman Ansley - <u>How to Keep From Being</u> Robbed	351
Index to Volume 13	351

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# EFFECTS OF DIAZEPAM AND METHYLPHENIDATE ON THE ELECTRODERMAL DETECTION OF GUILTY KNOWLEDGE

## By

## William G. Iacono Guy A. Boisvenu Jonathan A. Fleming

#### Abstract

Sixty male undergraduate students were randomly assigned to one of four groups in an investigation of the effects of antianxiety and stimulant drugs on polygraphic interrogation. Subjects in the three guilty groups watched a videotape depicting the burglary of an apartment through the eyes of the thief. Each subject was asked to imagine that it was he who was committing the crime and was given instructions to encourage his becoming absorbed in the videotape. Afterwards, the subject received either diazepam, methylphenidate, or a placebo. Subjects in the fourth group, the innocent control condition, viewed a videotape depicting scenes from the interior of another apartment, this time with no crime committed. All subjects were given a guilty knowledge test by an examiner who was blind to both their guilt or innocence and drug status. The results indicated that drug status did not affect the validity of the polygraph examination, which had an overall accuracy of 94%. A significant relationship between the ability to recall facts about the crime and detectability was found. The effects of habituation and personality attributes on detectability were also examined.

#### \* \* \* \* \* \*

An important issue related to the use of polygraphic interrogation concerns the extent to which persons suspected of a crime can adopt some strategy to beat the test. Perhaps the most significant report to date indicating that a guilty person may be able to defeat the procedures is that of

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Guy Boisvenu is now at McMaster University Medical School, Hamilton, Ontario, Canada. We would like to thank Robert Hare, David Lykken, and Auke Tellegen for helpful comments on preliminary versions of this article.

Requests for reprints should be sent to William G. Iacono, Department of Psychology, #154-2053 Main Mall, University of British Columbia, Vancou-PolyGraph 1984, Columbia, Canada V6T 1Y7.

## Drug Effects on Polygraphic Interrogation

Waid et al. (Waid, Orne, Cook, & Orne, 1981). These investigators discovered that when guilty subjects ingested an antianxiety drug prior to a polygraph test based on the guilty knowledge technique (Lykken, 1981), only 27% By contrast, guilty subjects taking a placebo or no drug were detected. were accurately detected 77% of the time, and 100% of the innocent partici-Waid et al. also noted that the drug pants were correctly identified. selectively reduced responsiveness to the critical test items. That is, the medicated subjects were just as likely to respond as the other quilty subjects, but unlike the others, their responses to the critical and neutral test items did not differ. Hence, it was not possible to detect either guilt or drug status from the recordings of physiological activity. The behavioral effects of the drug also went unnoticed; the examiner was unable to discriminate between those on and off the tranguilizer.

These findings, if they can be replicated, have a number of important implications. If antianxiety agents can be used as effective countermeasures in a lie detector test, then the validity of the examination will always be suspect unless accompanied by a medical drug-screening test. Moreover, the fact that the drug selectively reduced the response to the critical item indicates that the results were not due to a general, systemic effect. Rather, the drug effect was presumably specific to the anxiety associated with guilty knowledge, suggesting that it is anxiety, not simply guilty knowledge, that accounts for the effectiveness of the technique.

Our present study was intended as a constructive replication (Lykken, 1968) of the Waid et al. report. These investigators chose meprobamate as the antianxiety agent. We examined the effects of diazepam, a more widely prescribed and accessible minor tranquilizer that is easily obtained on the black market. We also studied the effects of methylphenidate, a stimulate that might also affect the outcome of a lie detector test. Stimulate drugs could selectively boost the response to a critical item, thereby facilitiating detection; or they could diminish detectability by maintaining autonomic reactions to control items at a high level. Other than the report of Waid et al., there are no controlled studies of the effects of drugs on polygraphic interrogation. Investigations of the effects of diazepam on the autonomic nervous system have produced mixed results ranging from decreases in skin conductance and respiration rate (Clemens & Selesnick, 1967; Masuda & Bakker, 1966) to increases in conductance and heart rate (Danielson et al, 1975). The effects of methylphenidate have been explored only with hyperactive children and indicate that treatment with this drug is associated with elevated skin conductance and cardiac rate (Ballard, Boileau, Sleator, Massey, & Sprague, 1976; Cohen, Douglas, & Morgenstern, 1971; Satterfield & Dawson, 1971; Spring, Greenberg, Scott, & Hopwood, 1974; Zahn, Abate, Little, & Wender, 1975). Although these studies indicate that diazepam and methylphenidate may alter autonomic functions, there is so much variability in the subjects and procedures used that it is impossible to infer from this literature how these drugs might influence the outcome of polygraphic interrogations.

Like Waid et al., we used a guilty knowledge test (GKT) to evaluate drug effects. This type of polygraph interrogation takes the form of a series of multiple-choice questions, each dealing with information by the perpetrator but would be unavailable to innocent suspects. Guilty individuals are expected to produce larger autonomic responses to the critical multiple-choice alternative, about which they have "guilty knowledge," than Polygraph 1984, 13(4) to neutral alternatives that have nothing to do with the crime. Waid et al. constructed their GKT around a list of six words that "guilty" subjects memorized. We used a different procedure, one that has not been used previously in studies of polygraphic interrogation. Our "guilty" subjects watched a videotape of an apartment being burglarized. The tape was filmed such that subjects appeared to be viewing the commission of the crime through the eyes of the thief. We asked subjects to carefully attend to the details of the event as though they were actually committing the burglary.

In addition to assessing the effects of antianxiety and stimulant drugs on the detection of guilty knowledge, the present investigation provided an opportunity to examine several issues important to the GKT that remain largely unexplored. A presumed shortcoming of the technique is that if a guilty person does not attend to or remember facts deemed important by the examiner, it is not possible to detect guilty using this procedure. We tested this assumption by examining the relationship between the outcome of the GKT and the ability of subjects to recall details from the videotape. Another interesting issue concerns the optimum length of the GKT. The more questions asked, the greater the mathematical likelihood of making a correct decision provided the questions and the response data associated with them are of equivalent quality (Lykken, 1974). In previous studies using this technique, too few questions were included to adequately assess the effects of test length. We used a carefully prepared set of 10 questions and evaluated how the psychophysiological response data and test outcome varied with the number of questions asked. Finally, our subjects completed a general personality inventory, thereby allowing us to examine the association between various dimensions of personality and the other dependent variables. To date, studies of the relationship between personality and polygraph test results have focused on traits related to the antisocial personality construct (Balloun & Holmes, 1978; Giesen & Rollison, 1980; Waid, Orne, & Wilson, 1979).

## Method

The study was conducted in two phases. The first phase was devoted to the preparation of crime and control videotapes and the validation of the set of GKT items. The second phase comprised the actual testing of the validated interrogation questions on the experimental groups.

Phase I: Construction of Videotapes and the Guilty Knowledge Test

A 12-minute videotape depicting the theft of items from an apartment was filmed by positioning the camera over the shoulder of the actor during the simulated burglary. The goal was to produce a videotape in which the viewer witnessed the crime through the eyes of the perpetrator. The film began with the actor breaking into the apartment, showed several acts of vandalism and the theft of various objects, and ended with the criminal exiting with his acquisitions. A second videotape, lasting about 10 minutes, simply presented scenes from another apartment. This control film provided a stimulus for innocent subjects that was similar in length and quality to the crime videotape but was without the crime dimension.

Twenty-two multiple-choice questions relating to the crime videotape were then generated. Each question has five alternatives, only one of which was relevant to the crime. The items dealt with the details of the crime,

the objects stolen, and salient features of the burglarized apartment. To test this transparency of the multiple-choice alternatives, this questionnaire was administered to 20 undergraduate students who had not seen the crime videotape. Subjects were instructed to try and guess the most likely answer to each question.[1] To evaluate the saliency of the events depicted in the videotape, an open-ended version of this questionnaire was administered to a different group of 36 undergraduate students who first viewed the crime tape. The questions were asked, but no multiple-choice alternatives were presented; instead, subjects had to recall the correct answer.

A final 10-item GKT questionnaire was assembled by choosing from the original pool the items that were most easily recalled but not transparent in the multiple-choice format. This list was then used for the polygraphic interrogation in the second phase of the study. The first multiple-choice item associated with each GKT question was never the relevant one. These "buffer" items eliminated the possibility that the expected large response to the first alternative was to one of the critical items.

Phase 2: Evaluation of the Effects of Drugs on the Guilty Knowledge Test

<u>Subjects</u>. Subjects were recruited from undergraduate psychology classes and the student employment center. All volunteers completed a drug use and medical history questionnaire that was screened by a physician (J.A.F.) to eliminate those whose participation posed potential medical risks. The 60 males ultimately included in the study ranged in age from 19 to 28(M = 22.8). All subjects gave informed consent and were paid for participating in the 2-hour session.

Apparatus and materials. Physiological activity was recorded on a four-channel Beckman Type R612 Dynograph. Bilaterial skin conductance was recorded from Beckman 1-cm biopotential Ag/AgCl electrodes attached to the distal phalanges of the first and second finger of each hand. The electrolyte consisted of physiological saline mixed with Unibase following the recipe provided in Lykken and Venables (1971). The area of skin in contact with the electrolyte was about 0.95cm<sup>2</sup>. Conductance was recorded using two Beckman Type 9844 skin conductance couplers. Maximum sensitivity was 0.5 micromho/cm of chart deflection.

A Beckman Type 9857 cardiotachometer was used to monitor heart rate from Lead II. Cardiotachometer sensitivity was 20 bpm/cm of pen deflection. Thoracic respiration was recorded using a strain gauge positioned around the subject's chest and connected to a Beckman Type 9853H voltage/pulse/pressure coupler.

A variety of questionnaires were employed in this study. All subjects

<sup>[1]</sup> We found it noteworthy that from 40% to 60% of the subjects correctly identified the answers to six of the questions. This occurred despite our confidence that the initial set of questions was adequate. Retrospectively, it was easy to comprehend why some relevant alternatives were correctly guessed. For example, a popular bank credit card that was stolen was frequently identified. How other items were identified, such as the number of the burglarized apartment or the time of day when the crime was committee, remains a mystery.

completed the State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, & Luschene, 1970) and the Differential Personality Questionnaire (DPQ; Tellegen, 1982; see also Lykken, Tellegen, & DeRubeis, 1978, for a description of the DPQ scales). The DPQ is an omnibus personality inventory with excellent psychometric properties. The 11 primary scales include measures of neuroticism, psychoticism, extraversion, danger seeking, and aggression. In addition, several questionnaires were devised to assess the impact of the experimental manipulations. The rating of drug status questionnaire consisted of three items and required subjects to rate the strength of their belief that they had ingested an active drug, methylphenidate, and diazepam on a 5-point scale. On a similar scale, subjects rated their level of confidence in the validity of the polygraphic procedure, in the competence of the polygraph examiner, and in the fact that the polygrapher was unaware of the subject's group assignment prior to the lie detector test. To assess the degree to which guilty subjects paid attention to the videotape, a 15item open-ended test that demanded recall of facts related to the crime was Ten of the quesitons on this test were from the GKT (with the included. multiple-choice alternatives deleted); the remaining 5 were added to increase the power of the test. Innocent subjects completed a similar type of questionnaire about their film, however, this information was not used in the data analysis.

The drug capsules given to the subjects were all identical in appearance. They were prepared at the university pharmacy and contained either 10 mg diazepam, 20 mg methylphenidate, or lactose.

Procedure. Subjects were randomly assigned to one of four groups, each composed of 15 members. For the three Guilty groups, subjects viewed the crime videotape and ingested a capsule containing either diazepam, methyl-phenidate, or placebo. Subjects in the fourth or Innocent group viewed the control videotape and did not ingest a capsule.

Prior to reporting to the laboratory, subjects were asked to abstain from drugs and alcohol for 12 hours and were instructed not to eat during the 2 hours preceding the experiment. At the beginning of the experimental session, participants were told that the polygrapher would not know which of the two films the subject would see, nor whether or not the subject ingested a capsule (or the contents of the capsule) until the end of the session. Similarly, although the subject would know which film he saw and whether or not he did indeed take a capsule, he would not learn of the contents of the capsule until the experiment was concluded. The subject was then given a sealed envelope and told that it contained the remaining instructions. The contents of the envelope included instructions for selecting and playing the appropriate videotape. Also included was a second envelope, to be opened after viewing the tape. If the subject was in one of the Guilty groups, this envelope contained the appropriate drug capsule. The experimenter then left the room and the subject opened the envelope.

Depending on their group assignment, subjects were required to watch one of two videotapes marked with a code indicated on their instruction sheet. Each videotape began with a display of the test of instructions to the subject that was accompanied by audio narration. Subjects in the Innocent group were told they would see a videotape showing the inside of an apartment. They were asked to attend to the film carfully because they would be eligible to earn some money if they could remember details on a POlygraph 1984, 13(4) postsession test of recall. Subjects in the Guilty groups saw and heard the following at the beginning of their tape:

We are presently living under difficult economic times. Money is hard to come by; jobs are scarce and difficult to obtain. You have decided that you are wasting your time as a student and would do better to apply your talents to another type of occupation. It is for this reason that you have decided to do an apprenticeship with a master thief. You are not the only student who has decided to do this; there is a lot of competition. In order to test your worth as a thief, the master thief has asked you to burglarize an apartment which he has previously cased. To succeed as an apprentice and be guaranteed a profitable career as a thief, you should steal only valuable items that will be difficult to trace. Besides carrying out the theft, you must also pay careful attention to where things are located and the general layout of the apartment. When you report back to the master thief, he will ask you questions about the apartment and about the stolen items. The videotape you are about to watch depicts your burglary of this apartment. By watching this tape carefully and letting yourself go. it will be as though you are seeing the crime as if you are actually committing it. Let yourself go and imagine that you are about to break into an apartment and rob it. If you perform your task well, you will not only succeed as an apprentice, but you will also earn a bonus of \$5.00. Good luck!

At the end of the tape; subjects in both groups were told that they were now in police custody because they met the description of someone seen in the apartment building at the time a burglary was committed. They were further informed that they had been asked to undergo a lie-detector test which, if passed, would lead to their freedom. Should the polygraph test exonerate them, subjects in the Innocent group were promised \$5.00 and those in the Guilty group were told the master thief would award them one of the stolen objects. Participants in the Guilty group were also informed that in order to help them escape detection, the master thief had sent them a drug that they were to take prior to the polygraph test.

The videotapes concluded with subjects being asked to open the second envelope, which contained the next set of instructions. Participants in both groups were told to go to a designated room, where they would find the polygrapher. Those in the Guilty group received additional instructions asking them first to take the pill that was in the envelope. On reporting to the polygrapher; subjects were told they would have 50 minutes to complete the personality inventories. If they finished prior to this time, they were instructed to sit quietly and wait for the polygrapher. Subjects were repeatedly reminded to discuss neither what they had seen nor their drug status and were told to refrain from asking the polygrapher any questions.

The polygraph test was conducted in an audiometric chamber that housed both the subject and the experimenter as well as an arm chair and the polygraph. After attaching the electrodes and respiration belt, the experimenter explained the interrogation procedure. To ensure that subjects paid attention to the GKT, subjects were told to respond to every multiple-choice alternative by repeating it and denying that it was involved in the crime.

Once certain that the subject fully understood the interrogation procedure, the experimenter completed a form in which he attempted to decide whether or not the subject had taken a drug and which drug, if any, he had ingested. This form was filled out a second time at the end of the interrogation procedure. At the conclusion of the session, the subject completed his postexperimental questionnaires and was given feedback on his personality test scores and GKT performance. If he took a capsule, the subject was also told which drug he had ingested.

Scoring the polygraph charts. All charts were scored blindly. Skin conductance amplitude was measured as the difference between the maximum associated with the subject's response and the level preceding the reading of the GKT alternative. Guilt scores were computed according to Lykken (1960). All skin conductance responses except those associated with buffers (the first alternative to every question) were rank ordered according to magnitude. If the skin conductance response to the critical alternative had the highest magnitude of the four responses, then it was assigned a score of 2. If it was second highest, it received a score of 1. Ties were handled by splitting the rank score among tied responses. The actual guilt score for an individual was determined by summing up his 20 individual rank scores (10 questions yielding responses on two hands) and dividing this total by the number of scorable questions the subject had shown. A question was considered scorable if at least one alternative other than the buffer elicited a skin conductance response greater than or equal to 0.03 micromhos.

For other analysis involving skin conductance response data amplitudes were collapsed across both hands. Similarly, tonic skin conductance, which was defined as the skin conductance level immediately preceding the onset of each of the 10 questions, was also collapsed across hands. Tonic heart rate was defined as the average heart rate during the 5 s immediately preceding the onset of each of the 10 questions. Respiration period was quantified by counting the number of seconds taken to complete 15 cycles following the onset of the first question and by repeating this calculation for the 15 cycles beginning with the 10th and final question.

For all statistical analyses requiring repeated measures analysis of variance (ANOVA), the epsilon-correction procedure of Greenhouse and Geiser (1959) was used to reduce the number of false-positive findings. The uncorrected degrees of freedom together with the adjusted  $\underline{p}$  value and epsilon are presented for these analyses in the Results section.

## Results

Although group assignment was random, the groups might differ on some characteristic that could affect the results. To rule out this possibility, group differences in personality scores, perception of the experiment, and the ability to recall critical knowledge were examined. The scores on the 11 DPQ and 2 STAI scales were subjected to a multivariate analysis of variance that failed to show a significant group effect. All the univariate analyses of variance (ANOVAS) computed for each personality variable were also nonsignficant, except that associated with the scale measuring achievement (the tendency to work hard). Oneway ANOVAS were carried out on the subjects' ratings of confidence in the lie detector test, the examiner, and in their belief that the experimenter was truly blind to the experimental conditions. A significant effect emerged only for confidence in the examiner

<u></u>		Group						
Test length	Classification	Innocent	Placebo	Diazepam	Methylphenidate			
10 items	Guilty	0	11	13	13			
to nems	Innocent	12	3	0	2			
	Inconclusive	3	1	2	0			
5 items	Guilty	1	13	11	15			
5 mm	Innocent	12	1	3	0			
	Inconclusive	2	1	1	0			

#### Table 1

Number of Subjects Classified as Guilty or Innocent in Each Group

F(3,56) = 3.52, p < .05. Inspection of mean values revealed that the Methylphenidate group averaged .5 scale points more confidence than the other groups. However, post hoc contrasts failed to identify any significant differences between groups at the .05 level. Finally, the three Guilty groups were found not to differ in their ability to recall facts related to the crime. The fact that the groups did not differ on two of the three "confidence" ratings and recall of critical knowledge indicates that the drugs had no effect on these variable. Taken in the aggregate, these results were interpreted as not yielding any meaningful differences between groups. Hence, these variables can be discounted as possible contributors to any observed differences between groups on the other dependent measures.

## Outcome of the Polygraphic Interrogation

To test the hypothesis that drug status affects the accuracy of the GKT, subjects were classified as "innocent" or "guilty" using guilt scores. Six subjects were excluded from this particular analysis because they did not meet the criterion of 10 or more scorable responses (out of 20). Since guilt scores ranged from 0 to 2, the cutoff score was set at 1.0 (Lykken, 1960). Any subject scoring below 1.0 was classified innocent, and any subject scoring between 1 and 2 was classified quilty. The resulting classification is shown in the top half of Table 1. A Yate's-corrected chi-square test performed on this classification table was significant,  $x^{2}(3, N = 54)$ = 29.42, p < .001. The hit rates were 100% and 88% for subjects in the Innocent and Guilty groups, respectively. Taking the mean of these values as an estimate of overall validity, the accuracy of the GKT was 94%. If the 6 inconclusive subjects are included and counted as innocent, the accuracy dropped to 91%.

Seventy-five percent of the subjects in this study would have been correctly classified if all subjects were labelled guilty. To determine if the GKT actually improved over base rate prediction, a separate  $x^2$  test was performed on the subjects in the Innocent group to determine if the observed frequency of false positives (0) differed from chance expectation (in this case, 9). The result was significant, Yates corrected  $x^{2}(1, N = 12) =$ 32.11, p < .001, and confirms that the GKT performed at much better than chance levels in correctly identifying the subjects who viewed the control Polygraph 1984, 13(4)

	Group					
Measure	Innocent	Placebo	Diazepam	Methylphenidat		
Averaged heart rate level <sup>a</sup>	66.4	69.1	69.3	77.2		
Averaged skin conductance level <sup>b</sup>	7.5	8.7	6.5	9.2		
Averaged respiration period <sup>e</sup>	4.0	4.1	4.8	4.4		
No. of scorable responses	15.3	17.4	16.9	19.2		

Note. Averaged heart rate and skin conductance levels represent the mean of the tonic levels preceding each of the 10 questions. Averaged respiration rate represents the mean of the estimates taken from the beginning and end of the polygraph interrogation. The repeated measures ANOVAS described in the text were based on unaveraged measures of heart rate, skin conductance, and respiration and not on these mean values.

\* In beats per minute.

<sup>b</sup> In micromhos.

<sup>c</sup> In seconds per cycle.

#### Table 2

Averaged Heart Rate Level, Tonic Skin Conductance, Respiration Period, and Number of Scorable Responses for Subjects in Each Group.

## Guilt Effects

Did the Guilty and Innocent groups differ on measures other than the guilt score? To answer this question, repeated measures ANOVAS were run on the Placebo and Innocent subjects for skin conductance level, heart rate, respiration, number of scorable responses, and state anxiety. No group effects or interactions were observed (see Table 2 for a summary of the data on which these analyses were based).

## Drug Effects

To examine drug effects, comparisons were made between the three Guilty groups. A number of significant differences were found on the paper-and-pencil measures. Subjects completed the state anxiety measure both before and after the polygraph test. A repeated measures ANOVA indicated significant time, F(1, 42) = 6.17, p < .05, and group-by-time interaction effects, F(2, 42) = 4.64, p < .05. Inspection of group means revealed that these significant results were due to the Innocent, Placebo, and Valium subjects showing a decrease in state anxiety, whereas the Methylphenidate group showed an increase at the end of the interrogation.

To determine whether or not subjects in the Guilty groups were aware of which drug they had taken by the end of the session, one-way ANOVAS were performed on each of the three items from the drug-status questionnaire in which subjects rated the strength of their conviction that they had taken an active drug, diazepam, and methylphenidate. Subjects receiving methylphenidate rated their having done so as more likely than did subjects in the other groups, but this result was not statistically significant. Significant group differences were evidence in subjects' beliefs that they had taken an active drug and diazepam, F(2, 42) > 9.53, p < .001 for both drug ratings. Post hoc multiple comparisons indicated that the Diazepam group

## Drug Effects on Polygraphic Interrogation

was responsible for these results. Subjects in this group were more likely to judge themselves as having taken a drug and believed the drug to be diazepam. The experimenter also rated subjects (including those from the Innocent group) on a similar scale, both before and after the interrogation. Two-way repeated measures ANOVAS applied to these data produced the same pattern of results that was evidence for the subjects' ratings. The significant group effects for the experimenter's active drug and diazepam ratings were attributable to his belief that the diazepam subjects were taking this drug, F(1, 56) > 4.49, p < .01, for both drug ratings. A total of nine subjects were identified on a 5-point scale as definitely under the influence of a drug. Six of these were in the diazepam group, the other three were spread among the remaining groups. A significant time effect indicated that the examiner was more likely, at the end than at the start of the session, to rate subjects as on a drug and all but the methylphenidate and innocent subjects as on diazepam, both Fs(1, 56) > 8.36, p < .01. Finally, the two interaction effects were significant, both Fs(3, 56) > 2.39, p < .05, indicating that the pre-post change in ratings was most pronounced for the Diazepam group, followed by the Placebo group. To summarize these results, both the subjects and the experimenter were generally aware of the effects of diazepam and unaware of the effects of methylphenidate.

Comparisons of the three Guilty groups on the psychophysiological variables produced little indication of drug effects (see summary data in Table 2). Although tonic heart rate and skin conductance were slightly higher for the methylphenidate subjects, as was the number of scorable responses, none of the group differences on these measures was statistically significant. Group differences in respiration period were also nonsignificant, but a significant time by group interaction indicated that respiration period increased for the methylphenidate subjects while decreasing for the remaining groups, F(2, 42) = 3.44, p < .05. Inspection of the raw data indicated that this unexpected results was due largely to one of the methylphenidate subjects who began to take larger breaths and pace his respiration midway through the interrogation. This individual increased his respiration period by 84%. When the analysis was repeated with this subject eliminated, no significant respiration effects were evident.

## Factors Affecting the Outcome of the Guilty Knowledge Test

To assess the relationship between a person's ability to remember critical facts and the likelihood of being found guilty, the product-moment correlation between scores on the questionnaire testing ability to recall details about the crime and guilt score was computed for subjects in the Guilty groups. The resulting correlation was significant, 5 = .53, p < .0001, and clearly showed that subjects who remembered more details about the crime film tended to score more in the guilty direction.

As a first step toward assessing the effects of test length on the GKT, we determined the equivalency of the test questions by computing Cronbach's alpha. The resulting coefficient ( $\alpha = .90$ ) confirmed that the 10 items formed a homogeneous set; individual items were found to correlate about equally well (median = .54; range = .33-.65) with the total GKT score. How well the questions fared in terms of the electrodermal responses they generated is indicated in Figure 1. To construct this graph, the average skin conductance response to the critical item for each question was plotted

against the average of the three noncritical, non-buffer items.[2] A threeway repeated measures ANOVA was applied to these data. The failure to find a group main effect, F(2, 42) = .29, is consistent with the previous analyses that indicated no effects of drugs on electrodermal activity. As is evident from the figure, the main effect for type of alternative (critical or irrelevant) was significant F(1, 42) = 55.11, p < .0001. There was also a significant effect for questions, F(9, 378) = 15.17, p < .0001,  $\epsilon =$ .48, indicating that response amplitude diminishes or habituates over time. Finally, there was a significant interaction between type of alternative and questions, F(9, 378) = 4.15, p < .001,  $\epsilon = .68$ . This latter analysis confirms the observation from the figure that the difference in skin conductance response amplitude between critical and irrelevant alternatives becomes less evident with each additional question.



Figure 1. Mean skin conductance response amplitude to guilty and innocent alternatives.

These figures suggest that the hit rate of the GKT may vary with the number of questions asked and actually decrease if the question list is too long. To evaluate this possibility, hit rate was computed as a function of test length. For these data, which are presented in Figure 2, inconclusive

<sup>[2]</sup> An interesting methodological issue concerns the necessity of discarding the response to the first or buffer alternative. This procedure is commonly followed because a large orienting response is expected to the initial stimulus in a series. The average skin conductance response amplitudes to the first two buffers were 0.81 and 0.43 micromhos, respectively. These values were clearly similar to those associated with the guilty alternatives, indicating that the buffers were necessary for the first two questions. Such was not the case for questions 3 to 10, however, where the average buffer amplitudes ranged from 0.26 to 0.18 microhos. As can be seen from Figure 1, these values were quite similar to those evoked by the irrelevant alternatives.



#### Figure 2

Accuracy of the guilty knowledge test as a function of number of items. (Hit rates were calculated by eliminating inconclusive subjects and dividing the number of subjects in the Innocent and Guilty groups, who were accurately classified, by the total number of subjects classified.)

subjects were eliminated from the calculations. As can be seen from the figure, GKT accuracy gradually increases, peaks, when the test is five questions in length, and then drops off somewhat. Inspection of the figure suggests that little was to be gained by asking questions 6 through 10. To determine whether this was so, a new guilty score based only on the responses to the first five questions was computed and subjects were once again classified as guilty or innocent using a cutoff score of 1.0. For this analysis, subjects were classified inconclusive if fewer than half their questions yielded scorable resposnes. The results differed little from those obtained using all 10 questions (see Table 1). The overall accuracy was 94%; including inconclusives and classifying them as innocent, it was 90%. However, use of the shorter test produced one false-positive case; none were evident with the 10-item test.

## Personality Correlates

To test whether personality attributes were related to the outcome of the GKT, the 13 personality measures were correlated with guilt scores for the 45 subjects in the Guilty groups. None of the correlations was statistically significant; all were less than .25 in magnitude.

## Discussion

Perhaps the most serious possible criticism of this study would be that the drugs were ineffective because they were administered in such a way that they could not be expected to influence the experimental outcome. This objection can be dismissed for a variety of reasons. The doses of diazepam and methylphenidate we used were several times the typical minimum known to

be clinically effective and fell within the range of the average therapeutic daily dose for these drugs. Subjects were instructed to refrain from eating during the 2 hours preceding testing, and a full hour elapsed between drug ingestion and the beginning of the interrogation. Following such procedures, diazepam has been shown to reach its peak effect (Holder, Jones, & Harping, 1975; Marjerrison, Neufeldt, Holmes, & Ho, 1973; Wretlind, Pibrant, Sundwall, & Vessmun, 1977). Although the time course of methylphenidate is not as well delineated, in children, at least, doses of methylphenidate equivalent to those we used have been shown to exert autonomic nervous system effects over a 1-hour interval (Aman & Werry, 1975; Satterfield & Daw-By comparison, in the Waid et al. (1981) study examining the son, 1971). effects of meprobamate on the GKT, subjects presumably were given no instructions regarding food intake, received a minimal dose (400 mg) of the drug that was well below the average daily therapeutic level, and waited only half an hour prior to the polygraphic interrogation.

More to the point, there is objective evidence that the drugs we used had an effect. Both the experimenter and the subjects accurately perceived the effects of diazepam. The effects of methylphenidate were less obvious, but a number of nonsignificant trends were evident that were consistent with expectation. Compared to the other subjects, the Methylphenidate group had higher tonic heart rate and skin conductance, had the greatest number of scorable responses, had the largest responses to the critical alternatives, and was the only group in which no subjects were dropped because they were electrodermally nonresponsive. These subjects also showed a significant increase in state anxiety over the course of the session.

Given that the drugs were properly administered, the results of this study clearly indicate that the drugs had no effect on the detection of guilty knowledge. Subjects in the Innocent and Guilty groups were easily discriminated whether or not participants in the Guilty groups were taking diazepam or methylphenidate. Hence, typical doses of these popular minor tranquilizing and stimulant drugs cannot be used as effective countermeasures during polygraphic interrogation. This conclusion is at variance with that of Waid et al. (1981). Since there were many procedural differences between the two studies, one can only speculate on the reasons for the discrepant findings.

The most obvious difference between the studies concerns the choice of antianxiety agents. It is possible that the results of Waid et al. were dependent on their use of meprobamate. We used diazepam in our study because it is a more commonly prescribed and available anxiolytic and is therefore more likely to be used by polygraph examinees. A second major difference involves the type of GKT used. Waid et al. had their subjects memorize a list of code words, whereas our subjects had to remember facts about a crime in which they were vicariously involved. In addition, our subjects were given an incentive to "beat the test." Finally, we instructed our subjects to specifically deny and repeat each multiple-choice alternative, a requirement adopted to ensure cognitive processing of each stimulus item. Although Waid et al. (1978) concluded that such a procedure might improve the accuracy of the GKT, their 1981 report does not indicate how subjects were instructed to respond to the list of test stimuli they used. To the extent that these methodological variations account for the discordant results between studies, our procedures are closer to the real-life application of the lie detector and may be expected to arouse more apprehension than those of

Waid et al. Hence, the possibility exists that antianxiety drugs reduce responsivity to critical items only when the consequences of being detected are minimal and the level of anxiety is low.

Several of our findings have implications for future research with the GKT. The videotaped crime poses an attractive alternative to the use of a mock crime in laboratory research. The videotape approach is in some responses more realistic than a mock crime, because an actual criminal act can be depicted. Videotapes also offer considerable flexibility. It would be easy to investigate the effects of participation in different types of crimes, including many that simply cannot be acted out in a laboratory setting. It would also be possible to determine whether repeated offenses of similar or different crimes by the same person affect the probability of detection. The likelihood that some aspects of crimes might lead to better GKT questions than others could also be easily investigated.

Investigations of the effects of autonomic nervous system habituation (the tendency of response amplitudes to decrease as more questions are asked or as questions are repeated) on the detection of deception have produced Several investigations have found that when a subject two basic findings. takes the same lie detector test repeatedly, accuracy declines with each repetition (Balloun & Holmes, 1979; Lieblich, Naftali, Shmueli, & Kugelmass, 1974; Orne, Thackray, & Paskewitz, 1972). Focusing on the contact of items appearing in a lie detector test, Ben-Shakhar and his colleagues (Ben-Shakhar, 1977; Ben-Shakhar, Lieblich, & Kugelmass, 1975; Lieblich, Kugelmass, & Ben-Shakhar, 1970) have posited that habituation to the critical and irrelevant items follows an independent course. The polygraph works, they argue, because the small number of critical items leads to relatively little habituation to this type of stimulus, whereas the large number of irrelelvant items generates habituated, small responses to these stimuli. Hence, the responses to relevant items stand out, and the ideal lie detector test has a small ratio of critical to irrelevant items. Support for this hypothesis was obtained when these investigators showed that the accuracy of the polygraphic procedure they used improved as this ratio varied from 1.0 to 0.125.

The present study appears to be the first to examine habituation to critical and irrelevant alternatives as a function of number of GKT guestions. Our findings extend the literature by indicating that habituation to the critical alternatives does indeed occur and supports the hypothesis of Ben-Shakhar et al. that habituation to critical and irrelevant items proceeds independently up to a point. For the procedures we used, the two types of alternative began to evoke responses of approximately equivalent amplitude after the fifth question. We also found that the GKT was just as accurate whether only the first 5 or all 10 multiple-choice questions were Although these results could be construed as indicating that a short used. test is to be preferred over a long one, a number of issues must be weighed. Considering the consequences to the individual, false-positive errors are more serious than false negatives. In the present study, had the test length been 3, 4, 5, or 6 items, 33%, 42%, 0%, and 8%, respectively, of the 12 subjects in the Innocent group who produced scorable charts would have been misclassified. Alternatively, had the test stopped at any one of Items 7 to 10, the false-positive rate would have been zero. Hence, the longer the test, the lower the probability that innocent subjects will be found guilty. A second important point concerns the psychological potency of the

guilty knowledge. If a suspect were guilty of an actual criminal act, the critical alternatives could be expected to elicit stronger responses and less habituation. Under such circumstances, a longer test obviously would not be disadvantageous when the subject was in fact guilty, and would minimize the false-positive risk for innocent suspects. Our results do indicate, however, that the optimal length of the GKT is an important issue that merits further research.

The relationship of personality attributes to the detection of guilty has not been thoroughly investigated. Waid et al. (1979) found that guilty subjects who were low scorers on the California Psychological Inventory Socialization scale were more likely to escape detection than were high scorers. Balloun and Holmes (1979) failed to obtain similar results using the Minnesota Multiphasic Personality Inventory Psychopathic Deviate scale, and Giesen and Rollison (1980) found no relationship between trait anxiety as assessed by Lykken's Activity Preference Questionnaire and detectability. In the present study, scores on a variety of personality scales were uncorrelated with detectability. These various findings indicate that, with the possible exception of socialization, there is no evidence that personality factors play an important role in the detection of deception.

#### References

- Aman, M.G. & Werry, J.S. (1975). Effects of methylphenidate and haloperidol on the heart rate and blood pressure of hyperactive children with special reference to time of action. Psychopharmacologia, 43, 163-168.
- Ballard, J.E., Boileau, R.A., Sleator, E.K., Massey, B.H., & Sprague, R.L. (1976). Cardiovascular responses of hyperactive children to methylphenidate. Journal of the American Medical Assocation, 236, 2870-2874.
- Balloun, K., & Holmes, D. (1978). Effects of repeated examinations on the ability to detect guilt with a polygraphic examination: A laboratory experiment with a real crime. Journal of Applied Psychology, 64, 316-322.
- Ben-Shakhar, G. (1977). A further study of the dichotomization theory in detection of information. Psychophysiology, 14, 408-413.
- Ben-Shakhar, G., Lieblich, I., & Kugelmass, S. (1975). Detection of information and GSR habituation: An attempt to derive detection efficiency from two habituation curves. Psychophysiology, 12, 283-288.
- Clements, T.L. & Selesnick, S.T. (1967). Psychophysiological methods for evaluating medications by repeated exposure to a stressor film. Diseases of the Nervous System, 8, 98-104.
- Cohen, N.J., Douglas, V.I. & Morgenstern, G. (1971). The effects of methylphenidate on attentive behavior and autonomic activity in hyperactive children. Psychopharmacologia, 22, 282-294.
- Danielsen, A., Halfner, J.F.W., Morland, J., Setekleiv, J., Frivik, P.T. & Stromsaether, C.E. (1975). Effects of diazepam and ethanol on heart rate and galvanic skin responses. <u>Acta Pharmacologica and Toxicologica</u>, <u>36</u>, 113-122.

- Giesen, M., & Rollison, M.A. (1980). Guilty Knowledge versus innocent associations: Effects of trait anxiety and stimulus context on skin conductance. Journal of Research in Personality, 14, 1-11.
- Greenhouse, S.W., & Geisser, S. (1959). On methods in the analysis of profile data. Psychometrika, 24, 95-112.
- Holder, G.E., Jones, I.A., & Harping, G.F. (1975). Proceedings: A quantitative investigation into the effects of carbamazepine, diazepam and quinalbarbitone on the EEG and visual evoked potential in man. <u>Electroencephalography</u> and Clinical Neurophysiology, 39, 430.
- Lieblich, I., Kugelmass, S., & Ben-Shakhar, G. (1970). Efficiency of GSR detection of information as a function of stimulus set size. <u>Psycho-physiology</u>, 6, 601-608.
- Lieblich, I., Naftali, G., Shmueli, J., & Kugelmass, S. (1974). Efficiency of GSR detection of information with repeated presentation of series of stimuli in two motivational states. Journal of Applied Psychology, 59, 113-115.
- Lykken, D.T. (1960). The validity of the Guilty Knowledge technique: The effects of faking. Journal of Applied Psychology, 44, 258-262.
- Lykken, D.T. (1968). Statistical significance in psychological research. Psychological Bulletin, 70, 151-159.
- Lykken, D.T. (1974). Psychology and the Lie Detector industry. <u>American</u> Psychologist, 29, 725-739.
- Lykken, D.T. (1981). A tremor in the blood. New York: McGraw-Hill.
- Lykken, D.T., & Venables, P.H. (1971). Direct measurement of skin conductance: A proposal for standardization. Psychophysiology, 8, 656-672.
- Lykken, D.T., Tellegen, A., & DeRubeis, R. (1978). Volunteer bias in twin research: The rule of two-thirds. Social Biology, 25, 1-9.
- Marjerrison, G., Neufeldt, A.H., Holmes, V., & Ho, T. (1973). Comparative psychphysiological and mood effects of diazepam and dipotassium clorazepate. Biological Psychiatry, 7, 31-41.
- Masuda, M., & Bakker, C. (1966). Personality, catecholamine metabolites and psychophysiological response to diazepam. <u>Journal of Psychiatric Re</u><u>search</u>, <u>4</u>, 222-234.
- Orne, M.T., Thackray, R.I., & Paskewitz, D.A. (1972). On the detection of deception: A model for the study of the physiological effects of psychological stimuli. In N.S. Greenfield & R.A. Sternbach (Eds.) <u>Handbook of psychophysiology</u> (pp. 743-785). New York: Holt, Rinehart, & Winston.
- Satterfield, J.H., & Dawson, M.E. (1971). Electrodermal correlates of hyperactivity in children. <u>Psychophysiology</u>, 8, 191-197.

- Spielberger, C.D., Gorsuch, R.L., & Lushene, R.E. (1970). <u>Manual for the</u> State-Trait Anxiety Inventory. Palo Alto: Consulting Psychologists.
- Spring, C., Greenberg, G.L., Scott, J., & Hopwood, J. (1974). Electrodermal activity in hyperactive boys who are methylphenidate responders. <u>Psychophysiology</u>, II, 436-442.
- Tellegen, A. (1982). Brief manual for the differential personality questionnaire. Unpublished manuscript. (Available from Auke Tellegen, Department of Psychology, University of Minnesota, Minneapolis, Minnesota 55455.)
- Waid, W.T., Orne, E.C., Cook, M.R., & Orne, M.T. (1978). Effects of attention, as indexed by subsequent memory, on electrodermal detection of deception. Journal of Applied Psychology, 63, 728-733.
- Waid, W.T., Orne, E.C., Cook, M.R., & Orne, M.T. (1981). Meprobamate reduces accuracy of physiological detection of deception. <u>Science</u>, <u>212</u>, 71-73.
- Waid, W.T., Orne, M.T., & Wilson, S.K. (1979). Effects of level of socialization on electrodermal detection of deception. <u>Psychophysiology</u>, <u>16</u>, 15-22.
- Wretline, M., Pibrant, A., Sundwall, A., & Vessmun, J. (1977). Disposition of three benzodiazepines after single oral administration in man. <u>Acta</u> Pharmacologica and Toxicologica, Suppl. (1), 40, 28-39.
- Zahn, T.P., Abate, F., Little, B.C., & Wender, P.H. (1975). Minimal brain dysfunction, stimulant drugs, and autonomic nervous system activity. Archives of General Psychiatry, 32, 381-387.

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## GUIDELINES FOR UNDERSTANDING NONVERBAL BEHAVIOR

By

## Murlene "Mac" McKinnon, Ph.D.

Over the last few years, hints for reading people's nonverbal behavior have shown up in such widely diverse publications as <u>Time</u>, <u>Playboy</u>, <u>Psychology Today</u>, the <u>FBI Bulletin</u>, and <u>Boardroom Reports</u>. Included are suggestions on how to attract members of the opposite sex; how to sell yourself in the corporate world; how to tell when people lie to you; how to present your best appearance to a jury; and many others. An underlying assumption in most of these articles is: "People are basically alike, if you can read one, you can read them all."

On close inspection of the nonverbal research literature coming out of the communications, psychology, and law enforcement disciplines, however, one finds the underlying assumption to be false. The findings suggest that not only do the same behaviors have different "meanings" in different situations, but also that people often display different behaviors in sending similar messages. Given that such differences exist, it stands to reason that a basic set of guidelines for interpreting nonverbal behavior would be helpful.

Since polygraph examiners and other investigators are "reading" nonverbal behavior as a means to decipher truth telling from lying, guidelines could very well save them some serious misinterpretations. Misinterpretation of behavior amounts to misinterpreting evidence in that it leads to erroneous conclusions and wasted time. Understanding behavioral cues gives the polygraph examiner another investigative aid to interrogation success. It is with this in mind that the following guidelines for assessing behavior are suggested. (If the reader is unfamiliar with the specific terms used in discussing nonverbal behavior, the writer suggests referring to the glossary following the conclusion, before proceeding.)

#### Guideline 1: Read the Subject Against the Population

The most basic rule in assessing a person's nonverbal behavior is, read the subject against the population. Humans have many nonverbal behaviors in common, for instance universal facial expressions such as happiness, sadness, disgust, fear, surprise and anger. Categories of gestures such as adaptors, illustrators, regulators, and emblems also display some similarities across cultures, although many of these individual behaviors are specific to one or more cultures and not to others.

While this rule is a starting point, persons who know just enough about nonverbal behavior to be dangerous (those who have read a few popular books or articles and subscribe only to the body language theory) frequently use this rule to the exclusion of all others. Herein lies the danger, the inference being that all people respond nonverbally in the same manner. While certain similarities exist, our common sense reminds us that all people do

The author is a professor at Delta College, Michigan. For reprints write to Macnlow Associates, 354 Colony North 1B, Saginaw, Michigan 48603. Polygraph 1984, 13(4) 314

not behave alike. Confirmation of this fact comes not only from the observations we make, but also exists in the supporting research in communications and clinical psychology.

Observations of nonverbal behavior across cultures illustrate that people use interpersonal space differently, utilize diverse emblems, and display facial affects under differing interpersonal circumstances governed by cultural norms.

Alternatively, one may look at responses of con men versus naive deceptives, that is, people who do not regularly practice deception. The question might be, "Who lies more convincingly, and why do I think so?" The con has had more opportunity to deceive, as well as more need to monitor his receiver's feedback. The feedback, when monitored and understood, helps him lie more successfully each time he practices deceit.

Regarding research, one has only to note the Schneider and Kintz study (1977) which examined differences in foot and leg movement of female and male students when lying. Some liars increased foot and leg movements while lying, others decreased them, but there was not obvious explanation for the differences. Several other research studies report differing nonverbal responses among deceptives, for example, McClintock and Hunt (1975) and Feldman, et al. (1978) found that nondeceptives smile more than deceptives, while Mehrabian (1971) found that deceptives smile more. The conclusion is that people are different and comparing their behavior to the population at large at best merely lays the groundwork upon which other observational guidelines must build.

## Guideline 2: Read the Subject Against Self

Proceeding from the proposition that there are similarities in peoples' nonverbal behavior, one must then identify the differences. Those differences arise because of diverse home environments, varieties of past experiences, and disparate significant emotional experiences. Even in home situations where children have been treated "alike" they respond differently, thus it is no surprise that with a diversity of experiences the number and kind of nonverbal responses increase as well.

The examiner does not have the luxury of establishing so-called "normal" behavior for a subject, for by the time a subject talks to an examiner, generally the subject already displays anxiety nonverbally. Nor can the examiner shadow the person for days compiling a summary of such behavior. If the examinee anticipates lying, his behavior may show unusual stress, or it may show none. What the examiner attempts, is the establishment of a base-line. By observing the subject in isolation (if possible) and also during background questioning (less threatening than the case facts), the observer gets a measure of the person's emotional state as expressed through behavior. This behavior constitutes the base-line for that individual, a base-line which serves as a reference point for comparison and contrast with behavior which comes later in the discussion of case facts and controls, if used. Although the base-line observations obviously do not encompass all of the subject's possible behavior variations, the adaptors witnessed at this point in the person who intends deception are usually the result of lower anxiety than he will experience later in the polygraph pretest. Thus his adaptors will often increase. The truthful person, while displaying many

adaptors at the start, will often display fewer adaptors and more illustrators as he gains confidence in the procedure. Once identified, these adaptors are then compared with both the type and number of the subject's adaptors displayed during the discussion of the case facts, the relevant questions (when reviewed), and the controls. (McKinnon, 1977-83)

#### Guideline 3: Read Behaviors in Context

Behavior must be read in context because the context or situation often assigns behavior its meaning. Perhaps a better way to state this is to say that a behavior seen in one context may be interpreted very differently from that exact same behavior seen in another context. Note, for example, the member of a lecture audience who displays a few adaptors such as self-grooming, scratching, and nose rubbing, as opposed to the subject of a criminal investigation interview who displays the same adaptors and more. While the latter may be leaking clues to lies she or he tells, the former likely is slightly bored with the lecture or thinking of something else and therefore displaying unrelated self-adaptors. In a similar vein, avoiding eye contact may indicate shyness in one situation while it clues the observer to a possible lie in another. Or, excellent eye contact which may indicate sincerity and truth-telling in one context, may well indicate a highly persuasive and aware con man in another.

When examiners neglect to apply the contextual rule to their observations, they run a grave risk of committing a serious error in behavioral interpretation.

## Guideline 4: Read Behavioral Clusters

Room for error in interpreting nonverbal behavior also lies in the tendency for some examiners to treat one specific behavior as a certain sign of deception. Some years ago, I heard an examiner-lecturer maintain that 95% of the time when a person smiles in an interview that he is lying. This generalization is very simplistic and it leads those who accept such statements without examination (and there are many among us), to interpretive errors, which may do serious injury to the examinee and possibly to our own reputations. This is particularly so if we allow our nonverbal observations to influence the charts, as opposed to utilizing them as interrogation wedges. Moreover, smiles may indicate happiness, delight over successful deception, sad memories and numerous other emotions. Sometimes they even indicate general deception.

As an illustration of what I mean: In 1979, I pointed out the hand shrug emblem as a sure indicator of deception to a group of examiners viewing a card playing experiment. In this instance, it was an excellent indicator. But a few days later, I watched a pretest subject who I read as truthful in other indications, utilize the hand shrug emblem repeatedly; that person was later verified truthful by another person's confession. The fact is, both truth-tellers and deceptives use the hand shrug, but in polygraph pretests which I have observed, there is a higher correlation of deceptives' usage of it than for truthfuls. Those of us who interpret nonverbal responses, must be careful, therefore, of simplistic generalizations. Based on the research in the field, as well as my further research, I can only remind examiners that single behaviors, in and of themselves, should not be interpreted as conclusive indicators of deception.

#### Murlene McKinnon

Neither, as far as the research literature is concerned, do consistent behavior patterns exist which reliably indicate deception. In so far as we seek out single behaviors and patterns, we do so because they do not fit with other behaviors and therefore may betray deceit.(Ekman, 1981) Thus in observing single behaviors which stand out, the examiner should note to what questions under discussion those behaviors are a response. In pursuing a line of questioning concerning those same subjects, the examiner then watches for similar or additional behaviors. Nonverbal clusters of facial play adaptors or other types of adaptors are particularly helpful in indicating topics which the investigator might wish to pursue.

## Guideline 5: Read Behavior Repetitions

This guideline ties in closely with the previous one. If the examiner deals with an issue at the beginning of an interview which produces anxiety for a subject, he might very well note the same or similar nonverbal responses when a person again discusses that issue.

Nonverbal behavior repetitions should be noted with particular reference to self-adaptor behaviors and the questions being answered when the behaviors are displayed. In this case the investigator seeks a pattern for the individual in response to important questions concerning the case facts. Do repetitions of certain adaptors or perhaps hand shrug emblems show up when questions are asked a second or third time, or rephrased in a different manner? Like behavior clusters and single behaviors which are out of synch with surrounding behaviors, nonverbal repetitions are clues or wedges that the examiner uses in formulating additional questions and following leads.

## Guideline 6: Reserve Judgment to Avoid Projection

Successful investigators and researchers have a lot in common. They use hunches; they make assumptions, but they do not generally arrest a suspect or mentally condemn someone until they have a good reason for doing so. We have already noted that no single nonverbal behavior or patterns of behavior have been accepted as reliable indicators of deception, and nonverbal reserach continues to confirm that position.

The nonverbal behavioralist also has hunches or hypotheses. Rather than outrun his assumptions, however, he or she waits, like the polygraph examiner, until all of the important and necessary evidence is in before making a judgment. In making the final interpretation, the behavioralist has considered the alternatives.

If the investigator and the behavioralist make their decisions too soon, they have done so with incomplete evidence and on the basis of a hunch. Because they have projected their unproved beliefs, assumptions, and possibly biases onto the subject, they are subject to error.

This guideline reminds us that we are researchers and as researchers our evidence must be complete in order to prove our hunches and support our conclusions.

## Guideline 7: Have an Idea of the Other's Frame of Reference

We accept the idea that when persons are happy or depressed we can Polygraph 1984, 13(4) 317

often recognize their moods by observing posture, eye behavior, mannerisms, and other components of nonverbal behavior. There is some evidence which indicates that nonverbal behavior also seems to be influenced by Machiavellianism (degree to which a person pursues a goal, irregardless of the means for attaining it); introversion and extroversion; and other lesser researched factors. Thus far, however, research is sketchy and contradictory.

In a study involving emotional concealment (DePaulo & Rosenthal, 1979), high Machiavellian concealers were not detected as readily as low Machs. Exline (et al., 1970) noted that, in an attempt to avoid punishment, guilt was denied longer and more eye contact was used by high Machs than by low Machs. Recently, in a study which examined nonverbal leakage during prepared and spontaneous lies of factual information, the researchers found little difference in the cues leaked between high and low Machs, but did note significantly longer body adaptor durations for both types when lying. (O'Hair, Cody, McLaughlin, 1981). As O'Hair et al. point out, it is possible that high and low Mach nonverbal behavior differs more in contexts involving emotional concealment (DePaulo & Rosenthal, 1979) or fear of punishment than in situations of factual deceit.(Exline, et al., 1970) Once again we must recognize that context has a great influence here.

In an unpublished study of nonverbal behavior using counter attitudinal advocacy done in an Israeli university, female extroverts were found to decrease leg movements and shifts during deceit while female introverts increased such movement. The results were statistically significant, but the sample size was exceedingly small, thus the results should not be generalized to others without further supporting studies. Nevertheless, these results are important in reminding us that people respond differently. More research is needed.

Finally, in examining frame of reference, we must consider ways that emotion serves as a source of deception clues. We already know that behavioral clues arise because people are concealing emotions; because they feel emotional about some information which they are withholding; or because they fear being detected or punished.

Ekman posits two more ways that emotion becomes involved in deception. He suggests that deception guilt (guilt felt when engaging in deception) is distinguishable from guilt felt over withholding information. He further notes that such guilt may vary with practiced deceivers and deceivers who value distinctly different social goals from their interviewers. A member of Students for a Democratic Society might be an excellent example of one who has different social goals, and one who could conceivably lie more successfully because of it. "Duping delight" wherein deception becomes an exhilarating challenge is also posited by Ekman. He sees this as a gradient where an increasing intensity of delight may cause leakage.(Ekman, 1981)

While some may not see it as important to know why people deceive, if one thinks about deception in terms of the different responses people display, it becomes extremely valuable. In other words, why people deceive undoubtedly affects how people deceive and because of that, frame of reference becomes an important consideration.

Lacking an application of all of the guidelines, nonverbal behavior Polygraph 1984, 13(4) 318 will often be misinterpreted. The individual explanation of the guidelines should not imply that each is applied separately. One does best to understand why they are necessary and to utilize them throughout the observation and interpretation process. Even considering differences in human behavior, one should experience more success by proceeding in this manner.

In review:

- 1) Read the subject against the population.
- 2) Read the subject against self.
- 3) Read behaviors in context.
- 4) Read behavior clusters.
- 5) Read behavior repetitions.
- 6) Reserve judgment to avoid projection.
- 7) Have an idea of the other's frame of reference.

Finally, we must all recall that the sciences of human behavior are inexact sciences. Attempts to quantify and qualify continue. The study of one researcher frequently contradicts the study of another. Does this mean we don't use nonverbal behavior until it becomes exact? No, I believe that it means we should recognize any ongoing limitations and use it as an investigative aid for more successful interrogation.

#### Glossary

- Nonverbal behavior includes facial expression, eye behavior, gestures, touching behavior, proxemics, chronemics, physical characteristics, vocalics or paralanguage (voice), posture and body movement, artifacts, and environment.
- Universal affect certain facial expressions proved to be common to all humans (i.e., happiness, sadness, anger, fear, surprise, and disgust.)
- Display rules cultural rules (generally acknowledged but not written) for the appropriate showing of facial expressions.
- Illustrators nonverbal acts (for our purposes hand and arm gestures) which are tied to speaking. They illustrate or describe what is said.
- Adaptors those nonverbal behaviors (identified by Ekman) developed during our childhood to enable us to adapt to our environment; satisfy personal needs; handle our emotions; perform actions; and maintain social interactions.
- Self adaptors hand to some part of the body.
- Emblems nonverbal behaviors which can be directly translated into language (i.e., hitchhiking gesture, obscene gestures) and are substituted for language. Gemerally tied to a specific culture.

- Regulators nonverbal behaviors which control the interaction in conversation.
- Hand shrug emblem a specific gesture in which the hands are rotated at the wrist from a palms down position to a palms up position.

## Bibliography

- DePaulo, B. & Rosenthal, R. Telling Lies. <u>Journal of Personality and</u> Social Psychology (37)(1979): 713-722.
- Ekman, P. Mistakes When Deceiving. <u>Annals of the New York Academy of</u> Sciences (364)(1981): 269-278.
- Exline, R., Thibaut, J., Hickey, C., & Gumpert, P. Visual interaction in relation to Machiavellianism and an unethical act. In P. Christie and F. Geis (Eds.). <u>Studies in Machiavellianism</u>. New York: Academic Press, 1970, 53-75.
- Feldman, R.S., Devin-Sheehan, L., & Allen, V.L. Nonverbal cues as indicators of verbal dissembling. <u>American Educational Research Journal</u> (15)(1978): 217-231.
- McClintock, C. and Hunt, R. Nonverbal indicators of affect and deception in an interview setting. <u>Journal of Applied Social Psychology</u> (5)(1975): 54-67.

McKinnon, M. Unpublished research notes, 1977-1983.

- Mehrabian, A. Nonverbal betrayal of feeling. <u>Journal of Experimental Re</u>search in Personality (5)(1971): 64-73.
- O'Hair, H., Cody, M., McLaughlin, M. Prepared lies, spontaneous lies, Machiavellianism, and nonverbal communciation. <u>Human Communication Re-</u> search (7)(1981): 325-339.
- Schneider, S.M. and Kintz, B.L. The effect of lying upon foot and leg movement. Bulletin of the Psychonomic Society (10)(1977): 451-453.

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Polygraph 1984, 13(4)

320

#### Вy

## Robert B. Peters

Recent conflicts over polygraph testing such as the John DeLorean situation have caused me to reflect on my work and training experiences in an effort to draw some insights as to why polygraph test errors occur and what can be done to avoid them. But before I offer my thoughts as to why errors occur in polygraph testing, I would like to make some observations regarding unfortunate situations that sometimes develop in cases where errors occur. All too often when polygraph decisions prove to be wrong there are accusations of dishonesty and corruption. While I am not foolish enough to think there has never been a dishonest polygraph examiner, I believe that some in our profession have been much too guick to make accusations of corruption and dishonesty against other examiners. I am convinced we are much too quick to blame errors on the particular techniques used by the other examiner or the school where the examiner received his initial training. A1though there certainly are differences in the procedures taught by various schools, I am convinced most of the major polygraph schools are teaching similar techniques and the debates we engage in regarding techniques for the most part are over relatively minor refinements of procedure, not major fundamental failings.

I was the first and perhaps still the only examiner who had received his initial training at the Reid School to attend the Military School's advanced polygraph examiner training course. I will always recall both Ron Decker's and my surprise when on test after test we found ourselves in complete and very precise agreement as to chart evaluation procedures and conclusions. This was true even though I was combining my Reid taught principles with the numerical evaluation I had picked up along the way at Dave Raskin's Polygraph Workshop at the University of Utah. Now there has been accusations by persons associated with each of these programs that proper or effective techniques were not being taught by the others, but my contact with all three programs provided me with knowledge and skills that have proved invaluable to me in my polygraph career and caused me to admire those associated with these programs. I recall once hearing Warren Holmes say there are a number of very good polygraph examiners all around this country and they are not all using the same procedures, but they are administering very accurate and effective polygraph tests. If we would keep this in mind, we would be more hesitant to blame errors on testing techniques only because they are different from the procedure we utilize, and we are not well acquainted with them. I also feel certain the majority of polygraph testing errors do not result from improper control guestions or off-target relevant questions, or from overly nervous examinees. It seems to me we too often search for the cause of errors in such things as the use of drugs and other countermeasures. While there certainly are many examinees who attempt to

The author is a member of the APA in private practice at 909 North Mayfair Road, Wauwatosa, Wisconsin 53226. He has previously served as a staff examiner for John E. Reid & Associates, The Wisconsin State Crime Laboratory, and a federal intelligence agency. Reprints are available from the author.

Polygraph 1984, 13(4)

## Why Errors Occur

"beat" the test by countermeasures most of these efforts are so crude they serve not as an obstacle to the competent examiner but in many cases only making reaching a correct conclusion earlier. Finally, I would like to say I have witnessed very few true false-positives or false-negatives. That is polygraph charts which clearly indicate the opposite of the truth. Which, if correct, means polygraph testing is even more accurate than polygraph examiners give it credit for.

My experience has convinced me that poor chart interpretation is by far the major cause of polygraph errors. There are several reasons for this. First I have always felt from the time of my initial training that polygraph schools do not devote enough time to the instruction and practice of chart interpretation. Even today the APA requires only forty-five hours out of a total instructional time of two-hundred sixty hours in the basic examiner training course be devoted to chart interpretation. A review of the annual APA symposium programs will reveal only an occasional presentation on chart interpretation. Perhaps because it is the most tedious and least exciting aspect of polygraph testing we find it difficult to devote as much time as we should to chart evaluation. Polygraph examiners certainly do not receive many rewards or positive reenforcement for their chart interpretation expertise. During my polygraph career I have received congratulations and commendations for elliciting information during a pretest interview and even more often for obtaining confessions following an examination, but never once have I been congratulated for proper chart interpretation. Which of course was what enabled me to identify and interrogate the correct person in the first place. But non-polygraphers have no concept of the difficulty involved in chart interpretation. It always amazed me when investigators and lawyers with no polygraph training who observed my testing over a close circuit television would claim to have correctly interpreted charts it took me fifteen minutes at my desk to numerically evaluate.

It has been my experience that while many polygraphers are anxious to learn about the chart evaluation techniques of others they are somewhat reluctant to demonstrate their own procedures, possibly indicating some uncertainty about their chart interpretation abilities. The majority of errors I have observed would not have been prevented by additional skill in detecting intricate respiration responses, precise measuring of cardio activity, or the use of a special SRR measuring device. The only chart evaluation skill that would prevent the majority of polygraph errors would have been the recognition and acknowledgement that some polygraph charts do not warrant an opinion as to an examinee's truthfulness, and that the examiner simply cannot determine by means of chart analysis whether or not the examinee is being truthful. Most polygraph testing errors occur when examiners force decisions out of polygraph charts that are very simply inconclusive.

Polygraph examiners can find it very difficult to give an inconclusive report for several reasons. There is a personality characteristic I find common to many polygraphers, which contributes to this situation. Polygraphers tend to be problem solvers and to possess a "can do" attitude. We tend to be the type of persons who are strongly motivated to resolve matters and to assist and satisfy those who seek our services. This motivation receives strong positive reenforcement from the consumers of our services whether they be fellow government officials, attorneys or businessmen. Inconclusive test results are unsatisfactory for everyone involved with a case and consumers are not reluctant to express their distaste for inconclusive

results. As a result examiners too often strain to base a decision on polygraph charts which do not demonstrate a clear, consistent pattern of truth or deception. When lecturing on chart interpretation, John Reid stated that polygraph charts had various degrees of difficulty and could be divided into three categories. Twenty to twenty-five percent of polygraph charts could be easily interpreted by any person who had received reasonably good training, and applied those principles to the charts before them. Sixty-five to seventy percent of polygraph charts required the very specialized skills that a well-trained, conscientious and experienced polygraph examiner who devotes great attention to detail brings to the task. The final five to ten percent of charts simply did not indicate whether or not the examinee was truthful or not, and no amount of skill or insight on the part of the chart interpreter would ever change that fact. Whether John Reid was correct about it being five to ten percent of charts that are inconclusive can be debated, but I am certain that the majority of errors in polygraph testing occur when polygraph examiners refuse to acknowledge that some polygraph recordings are inconclusive and no amount of chart evaluation skill will change the situation. On a number of occasions I have witnessed an examiner agonize over a set of polygraph charts for long periods of time, to repeatedly make the most exacting of measurements and to consult with other examiners over charts, which it was hopeless to expect would ever reveal the secret of whether or not the examinee was truthful. There have been other times I was asked to review polygraph cases where it was obvious an error had occurred. There were always many questions as to whether or not the examinee had used some secret means to "beat" the test, or had the polygraph examiner been unfair or biased, whether the relevant test questions were off-target, or whether the control questions were improper. Usually none of these concerns were justified. The only problem with the test was that the charts were inconclusive and the polygraph examiner had forced a decision out of them.

Inconclusive polygraph charts are recordings which do not demonstrate a distinct and consistent pattern of physiological responses differentiating relevant guestions from control guestions. While no amount of time and effort expended after the test will clarify inconclusive charts, often there were a number of actions which could have been taken during an examination to have enhanced the likelihood that the examinee would produce clear cut The Military Polygraph School teaches that inconclusive decisive charts. polygraph charts are very often the result of a deficient pretest interview, and my experience has convinced me this is positively correct. At the conclusion of the pretest interview the examinee should be clearly focusing his attention on either the relevant or the control questions. If the polygraph charts are not clear and consistent the examiner should be asking did I do all I could to enable and impel this examinee to focus attention on a specific questioning area? There are a number of factors that interfere with the focusing of the examinee's attention on a specific questioning area. If the testing process was not adequately explained to the examinee and there are still unanswered questions or concerns, that may result in inconclusive re-If the truthful examinee was not allowed to adequately describe cordinas. and discuss the details of the test issue and is still reviewing and debating these matters then the polygraph charts will reflect this mental turmoil with inconsistent-inconclusive polygraph recordings. If the untruthful examinee has not been obliged to focus on the specific test issue, and the consequences of an untruthful test result, then the physiological responses may be erratic and inconsistent, or even absent. The psychological basis of

the control question technique requires that the examinee be able to establish a psychological set on either the control or relevant issues. If the examinee fails to adequately establish this mind set, meaningful physiological responses will be absent or inconsistent.

Instead of agonizing over inconsistent-inconclusive polygraph recordings examiners would be better served to ask themselves did I adequately explain the testing process to the examinee? Did I adequately explore the topic and discuss the test issue with the examinee? Did I clearly define the specific test issue and the control question issues for the examinee? If the answer to anyone of these questions is "no", or there is uncertainly, then the examiner would be much wiser to schedule further testing and prepare to resolve pretest interview deficiencies rather than continue searching the initial polygraph charts for some overlooked insight.

Some causes of inconclusive polygraph recordings are even more basic than pretest interview shortcomings, and they do not require any specialized interviewing skills to correct, but only time and effort. All too often examiners will record polygraph charts which from beginning to end are erratic, too erratic to allow for a valid interpretation regardless of the examiner's skill in chart evaluation. Whenever I have observed such charts I am always amazed the examiner continued to record three or four such useless charts, as if his only task during the recording session was to turn the instrument on and off and read the test guestions to the examinee. It is futile to record polygraph charts which are erratic yet some examiners persist in doing so even when it is very evidence from the initial recordings that conclusive interpretation will prove impossible. When the first thirty seconds of a polygraph chart are unstable and erratic it requires an unrealistic amount of wishful thinking to believe that any useful purpose will be The unfortunate aspect of this is served by continuing such a recording. that very often some extra time spent emphasizing to the examinee the importance of such minor things as remaining still, avoiding unnecessary deep breathes, and reassuring them as to their ability to produce stable polygraph charts will result in very high quality, easily interpreted polygraph Respiration recordings should display a pattern of consistent charts. breath volume, a reasonably steady breath rate falling somewhere between the low teens and mid-twenties per-minute and a standard baseline should be clearly established. The SRR recording should float freely on the chart paper without any twitching and with only minor responses to spoken stimuli. The cardio system should be inflated and adjusted so that a recording as close as possible to one inch in amplitude is produced. It should be devoid of abrupt baseline changes, the pen should move freely across the chart paper unhindered by excessive friction or pen stops, and the pressure in the system should be relatively stable. Without these basic stable patterns involuntary responses to test questions and answers cannot be identified and measured. Polygraphers must assume the attitude that an examinee who cannot produce consistently stable physiological patterns does not deserve to have an opinion rendered as to his truthfulness.

Another cause of substandard, uninterpretable polygraph charts is the failure of polygraph exmainers to properly space test questions on the chart. This is an especially detrimental practice since duration is one of the most significant measurements of the intensity of physiological responses. The U.S. Army Military Police School teaches that a minimum of twenty seconds of chart time should exist between the examinee's answer and

the beginning of the next question. Dave Raskin, at the University of Utah, suggests that twenty-five seconds may be a more appropriate spacing. Almost every school agrees that a new question should not begin until the physiological response to the previous question has ceased, a period that can easily exceed fifteen seconds. It is an absolute necessity that test questions be spaced so that the examinee's physiological responses to various test questions will be distinct from one another and therefore easier to judge as to intensity and consistency. If physiological responses to test questions are not separated by adequate question spacing proper evaluation will prove hopeless. Yet time and time again I have witnessed polygraph charts where test questions were spaced less than fifteen seconds apart, and as a result it was often impossible to determine when a response was beginning or ending. The intensity of those responses were also difficult to judge.

It should be obvious that many of these basic causes of uninterpretable polygraph charts can be traced directly to the failure of the examiner to put forth a sufficient amount of time for the testing process. Proficient polygraph testing requires a great deal of time, attention to detail, and a tremendous amount of patience. An effective pretest interview begins before the examiner and examinee sit down together, with a detailed review of the factual background information. During the actual interview process attention to detail and thoroughness must be of utmost concern. High guality polygraph charts require careful attention to such mundane details as the wrap of the cardio cuff, the positioning and tension of the pneumograph assembly, the adjustment of sensitivity settings, and the positioning and posture of the examinee. These areas may require several adjustments before they are properly set and positioned, but all effort and time expended in these areas will be repaid many times over with stable polygraph recordings in which the examinee's physiological responses to each question are exact, and easily distinguished from one another.

Careful attention to all the previously mentioned shortcomings will increase the quality of polygraph recordings and dramatically decrease the chance of error due to faulty chart evaluation.

\* \* \* \* \* \*

## THE QUESTION OF THE INTENT QUESTION

#### By

#### Stanley Abrams, Ph.D.

Many assumptions made in the field of polygraphy have not been based on scientific experimentation, but on what might be called arm chair logic. Because the individuals who have put forth these ideas have different degrees of experience and training within the field, opinions have varied and at times some of these concepts have been demonstrated to be inaccurate. Floch(1950) described cases of circumscribed amnesia in which a criminal act was so repugnant to the perpetrator that he was capable of repressing the memory of the act to the extent that he could pass a polygraph test. In spite of evidence to the contrary, Lykken(1979) persists in declaring that psychopaths cannot be accurately tested because of their lack of emotional Highleyman(1958) indicated that neurotics could not be validly response. examined while Eliasberg(1946) stated that hardened criminals were immune to this approach. In one sweeping statement, Turner(1968) reported that all of those with cardiovascular disorders were not testable. One must also question the validity of such notions as the existence of a category of subjects who are guilt complex responders and individuals who have no recall of committing an act because of amnesia and will pass the test.

In relation to the intent question, it is widely held that this is generally a less valid approach than when a query is aimed at a specific concrete action. However, there is no scientific evidence to prove or disprove this theory, nor, is it likely that an experimental design could be adequately developed to test this out.

As it is presently employed, the intent question is used to either predict a future act such as "If you are employed by this company will you steal?" or to determine if, in an act that has been committed, the intent to carry this out actually existed. Since the question measures a state of mind in contrast to whether an act was committed, it is typically viewed as a secondary polygraph procedure and is utilized only when a more concrete question cannot be used. This paper will deal only with the latter approach, whether there was intent to commit an act that has taken place.

It has been assumed that less validity exists when employing the intent question because it allows the subject the opportunity of questioning his own motivations. One frequently hears that through the process of rationalization a guilty individual might be able to convince himself that he did not intend to commit the act in question. That is, the burglar makes himself believe that he only broke into the house to get out of the cold, the child molester convinces himself that he only was innocently tickling the child, and the shoplifter accepts that he did not purposely put the cigarettes in his pocket. While rationalization is defined as giving a good reason for a real one, it must be occurring at an unconscious level so that the subject must literally believe what he has said. He is not lying to the examiner, but to himself.

The author is a member of the American Polygraph Association. For reprints write to 2222 N.W. Lovejoy, Suite 401, Portland, Oregon 97210.

#### Stanley Abrams

The thinking of this examiner is that it is almost impossible for a person who has purposely committed a criminal act to deceive himself into believing that his actions were not motivated in this direction. If he, in fact, were able to pass a polygraph examination, it is felt that he utilized some countermeasure other than rationalization. These conclusions were based not only on this writer's experiences in the field of polygraphy, but also on his findings with psychiatric patients who only on extremely rare occasions repressed a recent act to the extent that they actually believed that it did not occur. Moreover, there is a sufficient body of polygraph research that demonstrates that in spite of an amnesia for an event, polygraph procedures are capable of determining whether the subject was involved in that particular act (Abrams, 1977). Specifically, the polygraph is able to test not only conscious but unconscious awareness.

The other side of the intent question relates to whether an innocent person could question his motivations to the extent that he could fail the test. Could a father, brushing against his daughter's breast while wrestling begin to have enough doubt about the accidental nature of the contact to demonstrate a false positive response when questioned on whether he ever sexually fondled his daughter? Based on some research data that indicates that the truthful are more difficult to test accurately than the deceptive (Horvath 1977, Barland and Raskin 1976, Raskin 1976) and that confirmatory tests, which have a greater percentage of truthful subjects, may be less valid, it is this writer's belief that there is a much greater risk of reduced validity with the innocent than with the guilty when the intent question is employed. This view has felt to have been corroborated in actual experience with the use of this approach.

Because these were only personal opinions and because no research design could be developed to adequately test this thinking, a decision was made to poll some of those polygraphists whose level of accomplishment would allow them to be considered experts in the field. Obviously, not everyone who had achieved a certain degree of success could be surveyed because of costs factors. Those selections were based on their contributions and their being chosen by their peers through election as president in one of the two national polygraph associations. Of the thirty individuals selected, fifteen were from the private sector and fifteen from law enforcement. The survey shown in Appendix I was sent to each person. Of the thirty surveyed, responses were received from twenty-four, but one of the responders indicated that his firm was not involved in administering any testing of criminal issues. Tables 1 to 8 indicate the responses provided by private and police examiners to the specific questions asked.

Table l

Should the Intent Question be used?	Private	Police
1. Never		0
<ol><li>Only if non-intent guestions can't be used</li></ol>	7	4 1/2*
3. Only in special cases when non-intent		
guestions can't be asked	4	6 1/2*
4. Used routinely	1	1
5	12	

\* Individual divided his answer between two categories.

## <u>Table 2</u>

Can	a Guilty Subject Rationalize His Behavior			
and	Pass?	Private	Police	
	1. Almost always			
	2. High likelihood	2	0	
	3. Some likelihood	5 1/2	6	
	<ol><li>Little likelihood</li></ol>	4 1/2	5	
	5. Never	0	0	

Table 3

Awareness of Guilty Subjects Passing.	Private	Police
1. Great many		0
2. Many	0	0
3. Some	1/2	0
4. Few	4 1/2	3
5. None	7	8
	12	

Table 4

Private	Police
	0
2	0
3 1/2	8
5 1/2	3
1	0
12	····
	Private 0 2 3 1/2 5 1/2 1 12

Table 5

Awareness of Innocent Subjects Failing.	Private	Police
1. Great many		0
2. Many	0	0
3. Some	1	0
4. Few	3	2
5. None	8	9
· · ·	12	11

## Stanley Abrams

## Table 6

Most	lik	ely to Occur With Intent Question	Private	Police
	1.	Much more likely innocent will fail		
	2.	Somewhat more likely innocent will fail	٦	1
	3.	Much more likely quilty will pass	0	1
	4.	Somewhat more likely guilty will pass	6	1
	5.	Approximately equal chance of innocent		
		failing and guilty passing	1	5
	6.	No effect either way	3	2
		v	12	10*

\* One individual did not respond to this question.

## Table 7

Do you use intent questions?	Private	Police
1. Yes	10	
2. No	2	4
	12	

## Table 8

Should	the	Intent	Question	be	Banned	as	Invalid?	Private	Police
1.	. Ye	ès							1
2.	. No	)						12	10
								12	

The results of this survey are reasonably clear and rather consistent between private and police examiners. Everyone agrees that the intent question should only be employed when a non-intent question cannot be developed and no one indicated that it should never be utilized. Both police and private exmainers indicated that there was little to some likelihood that a guilty subject could pass the test and two private polygraphists believed that there was a high likelihood of this. Eight examienrs stated that they were aware of a few lying subjects who passed the test through rationalizing their behavior in contrast to fifteen who know of none who had accomplished this. In contrast to the guilty subjects, private examiners appeared to feel there was less likelihood of an innocent subject being misdiagnosed and among the police polygraphists only five examiners were aware of innocent subjects failing the test, a smaller number than those who knew of a guilty passing. Private examiners in general felt that the guilty were somewhat more likely to pass while the police perceived the guilty as having as much chance to pass as the innocent to fail. Twice as many law enforcement examiners did not use intent questions as compared to the private polygraphists, but only one examiner of the twenty-three believed that intent questioning should be banned.

In summary, some of the results were inconsistent with this writer's

opinions. While it was believed that it would be highly unlikely for a false negative to occur among the guilty subjects there was some tendency for the private examiners to believe that the guilty could sometimes pass an intent question. The belief that this writer held that a good likelihood existed for the innocent to fail an intent question was generally not perceived by either private or police polygraphists.

Most examiners utilize the intent question as does this writer but there is general agreement that it is preferable to employ another type of questioning procedure if possible. This writer, along with all but one of those surveyed, feels that it should not be barred from use.

Some of the comments were of interest and should be noted. The majority were of the opinion that there was a manner in which the intent question could be altered to make it more valid. Several examiners, however, only substituted words such as "deliberately," "purposely," and "accidental," which still leaves the question within the realm of a state of mind. Two other polygraphists side stepped the problem by asking whether the subject was lying when he claimed he did not intend to commit a specific act.

Most of the respondents felt that with a good pretest interview and question formulation, the need for intent questions could be greatly reduced, but inevitably there will be some areas that cannot be evaluated in any other manner. It was pointed out that some cases are just naturally tied in with an intellectual frame of mind, like fraud, while others clearly involve a physical act where concrete questions are more readily developed.

Time was characterized as helping the process of rationalization, and it is felt that this is an accurate statement. However, it should be recognized that time plays a reverse role for the innocent who may begin to doubt his own motivations.

One examiner's reply was never touched on in these intent questions. It related to future activities: "If you are hired by this company, do you plan to steal anything?" While no questions were included in the survey on that topic, it can be assumed that there would be even more doubt of the effectiveness of this question than intent questions in general.

## Appendix I: The Survey

There are frequent occasions in which it is impossible to phrase a question in any manner except in the form of an intent question. For example, if the question relates to sexual contact with a child, "Did you purposely and with sexual intent touch Judy in the vaginal area?" attempts to eliminate accidental contacts in a case where no penetration or other specific act took place.

The weakness of the intent question is obvious, but does it so significantly reduce validity that it should not be employed. Since there is no research in this area, I am sending this questionnaire to you and some of the other leading names in the polygraph community. Both law enforcement and private examiners will be polled to reduce any bias.

I would sincerely appreciate your taking the few minutes required to respond to this as soon as possible.

- 1. In your opinion should the intent question
  - \_\_\_\_\_ never be used under any circumstances even if it means that the subject can't be tested
  - be used only when non-intent questions cannot be asked
  - be used only in special cases when non-intent questions cannot be asked
  - be used routinely
- 2. Do you believe that a quilty subject can rationalize his behavior thereby passing an intent question?
  - almost always ----
  - high likelihood
  - some likelihood
  - little likelihood
  - \_\_\_\_ never
- 3. Are you aware of guilty subjects passing polygraph tests when intent questions were used?
  - great many
  - many
  - some -----
  - few
  - none
- 4. Do you believe that a subject even though innocent can begin to question his motivations and fail an intent question?
  - very high likelihood
  - high likelihood -
  - \_\_\_\_\_\_ some likelihood
  - little likelihood
  - \_\_\_\_\_ no likelihood
- 5. Are you aware of innocent subjects failing polygraph tests when intent questions were used?
  - \_\_\_\_\_great many
  - \_\_\_\_ many
  - some
  - few
  - none

6. Regarding the intent question, is it more likely that (mark only one) \_\_\_\_ much more likely than an innocent subject will fail

- somewhat more likely that an innocent subject will fail
- much more likely that guilty subject will pass
- somewhat more likely that guilty subject will pass
- approximately equal chance of an innocent subject failing or a quilty subject passing
- no effect either way
- 7. Do you use intent questions at times now?
  - Yes
  - No
8. Do you feel that the intent question should be banned as an invalid procedure?

Yes No

Additional comments:

# Bibliography

- Abrams, S. <u>A Polygraph Handbook for Attorneys</u>. Lexington, Massachusetts: Lexington Books, 1977.
- Barland, G.H. & Raskin, D.C. "Validity and Reliability of Polygraph Examinations of Criminal Suspects." Report No. 71-1, Contract No. 75-N1-99-0001. Washington, D.C.: National Institute of Justice, Department of Justice, 1976.
- Eliasberg, W. "Forensic Psychology," <u>Southern California Law Review</u> 19 (1946): 349-409.
- Floch, M. "Limitations of the Lie Detector," <u>Journal of Criminal Law and</u> Criminology 4(1950): 651-652.
- Highleyman, S.L. "The Deceptive Certainty of the Lie Detector," <u>Hastings</u> Law Journal 10(1958): 47-64.
- Horvath, F.S. "The Effect of Selected Variables on Interpretation of Polygraph Records," Journal of Applied Psychology 62(1977): 127-136.
- Lykken, D.T. "Guilty Knowledge Test: The Right Way to Use a Lie Detector," Psychology Today (March 1975): 56-60.
- Raskin, D.C. "Reliability of Chart Interpretation and Sources of Errors in Polygraph Examinations." Report No. 76-3, Contract No. 75-N1-99-0001. Washington, D.C.: National Institute of Law Enforcement and Criminal Justice. U.S. Department of Justice, University of Utah, 1976.
- Turner, W.W. Invisible Witness: The Use and Abuse of the New Technology of Crime Investigation. Indianapolis, Indiana: Bobbs-Merrill Co., 1968.

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# THE IMPORTANCE OF LISTENING IN THE INTERVIEW AND INTERROGATION PROCESS

## By

## Edgar M. Miner

Some time ago, a Kansas sheriff talked to a suspect in a liquor store robbery. At first the suspect was reluctant to talk about anything, much less the robbery, but soon began to talk about his girlfriend. They had gone to California together, began visiting and drinking with another man at a bar, and soon the three were making rounds of the bars together. After several days, the girlfriend deserted the suspect, leaving with the other man. Of course this had absolutely nothing to do with the liquor store robbery. Many in law enforcement would have instructed the suspect to talk only about the robbery. The Kansas sheriff, however, listened to the story of the suspect's love life. After giving the full details of his love life, the suspect said, "That's why I got into this trouble." His full confession soon came as a result of more listening.[1]

## Distorting the Story

Since most texts center more on questioning than listening, what is the effect of questions? While not conclusive, research has shown that some questions may distort both the answers and later recollection. In one study, a 3-minute video tape of a disruption of a class by demonstrators was shown to 56 undergraduate students.[2] One group was asked passive questions, such as, "Did you notice the demonstrators gesturing at any of the students?" Another group was asked active, loaded questions, such as, "Did you notice the militants threatening any of the students?"[3] When tested 1 week later, those who were asked active questions remembered the incident as more noisy and violent and the demonstrators as being more belligerent. Their reaction to the demonstrators was more antagonistic than those students who were asked passive questions. The article concludes that descriptions of witnesses to a complex situation can be influenced by the questions used to interrogate them about the incident. How suggestive a question may be or how much a person may be influenced is difficult to determine.[4] If a witness gives a narrative report rather than answering frequent questions, would it be more accurate? In a previous study it was stated that "a good deal of research has been conducted over the last 70 years and has been indicated that relative to a narrative report form, an interrogatory report is more complete, but less accurate. Thus one conclusion that might be reached is that when people are forced to answer specific questions, there accuracy suffers, and further, that some questions affect accuracy more than others."[5] The authors cite earlier studies in which it was concluded that a narrative/interrogatory order produced more correct responses, fewer "don't know" responses, but little change in the frequency of incorrect responses.[6]

If an interviewer will first listen to the full story by a witness,

The author is a Special Agent, Federal Bureau of Investigation, in the Education and Communications Arts Department, FBI Academy, Quantico, Virginia. This article is reprinted with permission of the FBI Law Enforcement Bulletin where it appeared in the June 1984 issue.

followed by specific passive questions that have been triggered by careful listening to the narrative, he should get accurate, complete information. Listening, then, seems as valuable a tool as questioning.

Prior to the interview, the interviewer should set out a list of specific questions to be asked, realizing that there are problems with this approach. First, the questions are based on the interviewer's knowledge of the incident and are apt to be loaded with the interviewer's preconceived notion of what happened. Since it is the witness who will testify at a trial -- not the interviewer -- the interview must reflect the viewpoint of the witness, not that of the interviewer. If it does not, it may result in embarrassment to the interviewer as the witness' true viewpoint is brought out in cross-examination in court. Second, this approach may lead to distortion, depending upon how suggestive the particular guestions are. Third, the information obtained from the witness through this procedure is limited. A long list of questions leads the witness to believe that the interviewer wants only limited information and that volunteered information is not wanted. If the interviewer concentrates on the prepared questions, no opportunity may arise for volunteered information. It is the unsolicited information from the witness' viewpoint that enhances the interview, making it both more complete and more accurate. When only a few unloaded questions are asked initially, the witness is given the feeling that anything he says is significant. The full story then flows forth freely.

## The Narrative Report

One can obtain more accurate and complete information in interviews through simply listening. After the formalities of introduction, the interviewer should say, "What happened?" and follow this question with a long period of active intense listening, allowing the witness or subject to tell the full story as he sees it. How well the interviewer listens initially is crucial to the interview. Only after the full story has been told in narrative form, without interruption, should specific questions be asked. These questions should be based both on missing elements of the narrative and planning before the interview.

## Listening Aids

A few simple aids to better listening that can be easily remembered, practiced, and added to everyday habits will aid in forming successful listening habits. Practice of these listening skills should lead to improved interviews and interrogations.

## Avoid Distractions

Most people speak at a speed of about 125 words per minute,[7] extremely slow compared to what the brain can handle. A poor listener's thoughts drift away into daydreams or outside thoughts during this spare time, then fail to return for crucial spoken words. While a listener is wondering whether he turned off the waffle iron, the witness or subject may say something important -- thought connections are lost. A phrase may be spoken only once while the listener's thoughts have drifted away. That phrase may contain an important item of evidence or an important admission of a suspect, but it goes undetected because the interviewer is daydreaming.

## Edgar M. Miner

To aid concentration, a listener should use the extra thinking time to think ahead of the talker, formulate ideas on where the talker is headed, and connect nat information to what has already been said. He should also withhold weighing the evidence or making any evaluation until the complete message is understood. There is a strong tendency to make a quick evaluation without first getting the full meaning. Patient listening should be followed by questions to weigh the evidence and separate truth from lies.

Watching the clock can be a severe distraction to good listening habits. Beginning an interview only 30 minutes before the car pool leaves for home will cool the interviewer's listening desire. "Get to the point" and "Give me the bottom line' are other forms of impatience that can eliminate much of the detail from any interview. "The bottom line" has no relevance without sustaining explanation.

Questions prepared before the interview can hinder concentration greatly, since the interviewer is often thinking about what he will ask next rather than concentrating on the answer being given. Questions that clarify a narrative by a witness can only be formed through proper listening.

## The Listener's Responsibility

One should listen actively rather than passively.[8] Good listening is hard work. The listener's own actions, i.e., body movement, eye contact, hand gestures, head nodding, facial expression, and tone of voice, must convey to the witness an interest in what is being said and an interest in the witness as a person. Leaning toward the speaker conveys the nonverbal signal that we are interested, even enthused, about the informaton being given. Through tone of voice, facial expression, and body movement, the interviewer can betray emotions of disgust, boredom, disbelief, and contempt which can make a witness defensive or evasive.

#### Time Frame and Space Descriptions

As the narrative by a witness develops, a time frame should begin to develop in the mind and notes of the interviewer, then be firmed up through questioning after the narrative. A map of the crime scene is also necessary, including the position of each witness, table, chair, truck, auto, and weapon, showing movement as it took place. It has been observed during role playing interviews that trainees who failed to complete this step of the interview missed much of the necessary information. Listening with time and space in mind is an excellent way of weighing the truth and accuracy of both the witness' and the suspect's versions since lying about time and space is most difficult. It is even more difficult to lie about time and space on review or during a second interview. Many persons forget more easily when they have lied.

# Understanding Emotions, Ideas, and Facts

People want interviewers to understand their ideas, emotions, or attitudes. Facts are used only to support their ideas. Allowing a narrative with little interruption allows the witness to give us his ideas and point of view with little distortion.

Another important part of an interview is listening to the questions of Polygraph 1984, 13(4)

the witness or subject. A complaining witness wants to know if the stolen property has been or can be recovered and when and where he might be called to testify. An interviewer who lacks patience and understanding is headed toward an unproductive interview and is creating an obstinate witness.

#### Nonverbal Messages

Words alone convey only a part of any message. Sixty-five percent of a message is nonverbal.[9] To listen well, the interviewer must expand beyond mere words, gathering meaning from tone of voice, eye contact, facial expression, hand gestures, body language, clothing, and environment.

Emotion and attitude, in particular, are exhibited through nonverbal means and are often difficult to express through words alone. For example, a listener may say, "I'm very interested in what you are saying," but unless these words carry with them the listener's intensity in gesture, tone of voice, eye contact, and body movement, the total message will convey little interest or enthusiasm.

While untrained observers may detect deception by chance, persons in certain occupations seem to develop the ability better than others. Polygraphists often detect deception without their machine through experienced looking and listening. Professional poker players also develop a degree of competency in detecting deception and possess psychological skills that clearly separate them from amateurs.[10]

Although the findings have not always been consistent, researchers have found liars to have higher pitched voices, less eye contact, more hand shrug gestures, less nodding, more speech errors, and a slower speaking rate. Feet/legs are usually the best source of deception cues, the hands next, and the face the poorest.[11] Leakage and deception in the face often come from microfacial movements (about the same time length as an eye blink), which may reflect a spontaneous reaction, only to be followed immediately by a masking facial expression.[12]

While few simple rules can be derived from the considerable literature on nonverbal communication, a listener/interviewer must be aware of non-verbal messages. If deception is seen by the interviewer in a witness' behavior, it is likely to also be seen by a jury during trial.

Departure from the norm may indicate deception. If the normal behavior of the person being interviewed is carefully observed during the initial stages of an interview through routine questions with presumably truthful answers, comparisons can be made to his reactions to later questions designed to further test truthfulness.

Communication research has found human observers to be suspicious of communication that is too strained or too pleasant, where the responses are too long or too short, or where there is "any deviation from a hum-drum response."[13]

Deceptive answers can be expected to show departure from normal behavior. Inconsistency between verbal and nonverbal cues is important, too, such as using polite words in an angry tone of voice. It is difficult to control several channels of communication simultaneously.

## Avoid Advice and Criticism

There is in each of us a terrible temptation to offer advice and criticism. This distorts the information we are getting from a witness or suspect. There are five types of communication that make people defensive -evaluative, control, neutrality, superiority, and certainty.[14] A defensive witness is apt to restrict information or refuse to talk. Communication should be supportive rather than defensive. It should be descriptive rather than evaluative, problem-oriented rather than controlling, emphathetic rather than neutral, express equality rather than superiority, and should be a provisional solution, open to change. While there may be times when an investigator needs to make witnesses or suspects defensive, he usually needs to keep the interview open in order to obtain more information, rather than restrict or close it.

Even praise is an evaluation, making it more difficult for a person to express his problems, personal faults, or even a wrongdoing that might otherwise have been confided to an interviewer. A compliment or encouragement, as well as scolding, pleading, or appealing to reason, can create a listening barrier. An interviewer needs to think with a witness, rather than for him. By allowing a person to articulate and examine his own thoughts without evaluation, the listener is acting as a sounding board. The interviewee then begins to see himself in a truer light and becomes more open to disclosing more information.

## Paraphrasing

How can an interviewer know that a witness' story has been accurately recorded? Unless an interviewer is adept at shorthand, the notes and what the witness actually said are often very different. We all use different wording to express outrselves, have different perceptions of events, and different priorities, and our own viewpoints frequently find their way into notes taken during an interview. There is one way that much of this distortion in perceptions and change in wording can be overcome. The substance of a witness' testimony can be paraphrased to him until he agrees to what has been written. This method allows a meeting of the minds to take place, the interview should be far more accurate, and the witness is assured that the must satisfy the witness by repeating his thoughts, he is forced to listen well.

A person can't truly paraphrase unless the message has been understood. This takes concentration and forces out distraction. When an interviewer says, "I want to be sure I have this right. What you have told me is this ...," both he and the witness will be assured that the story was accurately received. If the facts were incorectly received the first time, they can be corrected before the defense embarrasses the witness and the investigator during the trial. The interview must reflect in paraphrase form the attitude, belief, content, and emotion of the person interviewed, not the investigator's.

## Recording More Than Words

Every message has two components -- content and emotion or attitude.[15] Both are needed for total meaning, but many law enforcement

## Importance of Listening

interview reports contain only the content or spoken word. The spoken word gives far less than the full meaning, since much of the emotion or attitude is exhibited not through words but through body movements, facial expression, or voice tone. Bearing this in mind, notes should reflect the emotional as well as factual content. There is nothing wrong with reporting in notes that a witness smiled or frowned as he said something, or that the witness looked downward when telling an important fact. While reaching conclusions as to the meaning of nonverbal action can be risky, describing nonverbal behavior can and does add substantially to the completeness and accuracy of an interview. Yet, few interview reports actually contain more than the words spoken.

## Training To Listen

Listening has become an important part of interview and interrogation training of new Agents at the FBI Academy in Quantico, Virginia. New Agent trainees interview an instructor playing the part of a witness or suspect, while another instructor evaluates the trainee's performance.

Experience has shown the best listeners to be the best interviewers. Role play scripts purposely include unclear or partial information that could not be contemplated in preinterview planning -- the interviewer must listen carefully to the witness. Questions to complete the information must then follow. For example, one role playing situation calls for the witness to mention some information but leave large gaps that must be filled. A few names, times, and places are mentioned by the witness without further ex-Mention of these facts to a good listener triggers necessary planation. In another role play scenario, a bank robbery suspect said, questions. "There weren't any customers in the bank." This lone statement is an excellent admission that a good listener should catch, making a notation of the exact words and testifying to this admission later. Such a slip of the tongue can either lose or win a case, but the statement is brief and can be easily lost if an interviewer is not listening well. Some trainees miss this important information at first, but improve their listening skills through practice.

Poor listeners interrupt; concentrate on questions instead of answers; fail to ask followup questions to clarify what a witness says; are impatient, over-eager, or over-relaxed; have little or no eye contact; and take few notes or notes that do not coincide with the story given. Bad listening habits can be corrected through critiquing role play interviews.

A shorter listening exercise that has proven worthwhile is to have a speaker explain to a listener several happenings that have had profound influence on the speaker's life. The listener than attempts to paraphrase the story to the speaker's satisfaction. Speaker and listener then exchange roles, followed by a discussion of their listening habits. This training exercise can be done in 5 or 10 minutes for each person and is especially useful when it is video taped so that each person may view his own behavior when listening.

## Summary

Often, an investigator may not be satisfied that he has obtained enough information or that it has been received accurately. By adhering to a few

simple, practical interviewing rules, the completeness and accuracy of interviews and interrogations can be substantially improved. Those who achieve these skills will soon find themselves understanding others better. They may also earn an unexpected dividend--understanding themselves better.

## Footnotes

[1] Proper warning of constitutional rights prior to questions is an integral part of the listening and questioning process of suspects and subjects.

[2] Elizabeth F. Loftus, Diane Altman, and Robert Geballe, "Effects of Questioning Upon a Witness's Later Recollections," Journal of Police Science and Administration, vol. 3, No. 2, June 1975, pp. 162-165.

[3] Ibid., p. 163.

[4] Ibid., p. 164.

[5] Ibid., pp. 162-164.

[6] <u>Ibid.</u>, p. 163. Citing Cady, "On the Psychology of Testimony," American Journal of Psychology, vol. 35, No. 110, 1924; Whitly and McGeoch, "The Effect of One Form of Report Upon Another," <u>American Journal of Psychology</u>, vol. 38, No. 280, 1927; Snee and Lush, "Interaction of the Narrative and Interrogatory Methods of Obtaining Testimony," <u>American Journal of Psy-</u> chology, vol. 11, No. 229, 1941.

[7] Ralph G. Nichols, "Listening is a Ten Part Skill," <u>Nation's Business</u>, vol. 45, July 1957, pp. 56-60.

[8] Carl R. Rogers and Richard E. Farson, "Active Listening," <u>Communi-</u> <u>cation and Interpersonal Relations: Text and Cases</u>, ed. William V. Haney (Homewood, III.: Richard D. Irwin, Inc., 1979), pp. 161-175.

[9] Lawrence B. Rosenfeld and Jean M. Civikly, <u>With Words Unspoken</u> (New York: Holt, Rinehart, and Winston, 1976), p. 5.

[10] David M. Hayano, "Communicative Competency Among Poker Players," Journal of Communication, vol. 30, No. 2, Spring 1980, pp. 113-120.

[11] Mark L. Knapp, Essentials of Non-verbal Communication (New York: Holt, Rinehart, and Winston, 1980), p. 140.

[12] Paul Ekman and Wallace V. Friesen, Unmasking The Face (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1975), pp. 14-15, 145, 150-152.

[13] Bella M. DePaulo, Miron Zuckerman, and Robert Rosenthal, "Humans as Lie Detectors," <u>Journal of Communication</u>, vol. 30, No. 2, Spring 1980, pp. 129-139.

[14] Jack R. Gibb, "Defensive Communication," <u>Journal of Communication</u>, vol. 11, 1961, pp. 141-148.

[15] Supra note 8, pp. 166-167. Polygraph 1984, 13(4)

## HISTORICAL REPRINT (1936): A RECORDING PSYCHOGALVANOMETER

#### By

## Rev. Walter G. Summers, S.J.

The present apparatus developed in the psychological laboratory at Fordham University resulted from our efforts to devise an instrument for the exact recording of human emotional variations. There is a long history of investigation of the nature and characteristics of the psychogalvanometric reflex. Instruments for these investigations ranged all the way from the simplest type of galvanometer to the Einthoven string galvanometer. From the time of the early Greek physicians, it was known that emotional changes even of a minor character could be detected by changes in heart rate, pulse and respiratory changes. These methods were refined in more recent times by Marston, Larson and Keeler. In our early investigations we employed pressure and respiratory apparatus to discover that they were not adequate to record many important emotional changes which not only were introspectively and consistently reported by subjects, but were definitely recorded by electrical instrumentation.

Our work began with an ordinary Wheatstone arrangement with a sensitive galvanometer which had a light and scale attachment. The ordinary laboratory D'Arsonval galvanometer proved unsatisfactory because of its inability to pick up small electric variations. We discovered that the more sensitive the galvanometer, the more sources of error crept in to our results. The greater sensitivity involved a longer periodicity in which the primary results we were endeavoring to record were masked by secondary and tertiary electrical phenomena. The next step in our investigation was the development of a cathode ray oscillograph with photographic recording attachment hooked up with a direct current amplifier. We succeeded in developing a fairly good amplifying system, the solution of which took considerable time. An ordinary cardiograph deals with a 30 cycle phenomenon. We had to devise an amplification system that would respond immediately and consistently to a phenomenon which was producing one variation every four to ten seconds. For this purpose we found that alternating current amplification was altogether unsuitable and consequently we were obliged to develop direct current ampli-The whole apparatus is now part of our museum. fication. It became increasingly evident, that to utilize a photographic record made by the movements of the beam of light in the cathode ray oscillography, lengthy protocols were necessary for exceedingly small units of every experimental process. We decided to change the apparatus and to develop a direct and visibly recording devide which would eliminate a great deal of the details required in the recording of experimental data when we employed the cathode ray oscillograph.

The completed apparatus is shown in Figure 1. the subject is connected

Reprinted with permission of Loyola College. Originally printed in the Bulletin of the American Association of Jesuit Scientists 14(2)(December 1936): 50-56. We were unable to reproduce the photograph used in that article and have substituted a picture of a Fordham Pathometer used by the New York State Police in the 1940's.[Ed.]

Rev. Walter G. Summers, Jr.



Figure 1

by means of two german silver contacts placed in the palm of each hand, the leads from which are led into the binding and posts. The box to the left of the picture contains the amplifying and rectifying systems. After amplification the current is drawn out through binding posts, carried through the shunt, and thence by the recording milliammeter. There is an input circuit which enters through the rear of the box. The subject is balanced electrically by means of the dials, the lower of which governs coarse and the upper adjusts fine readings. The milliammeter, which is in series with the recording milliammeter, is employed as a check meter and also as a safety for the protection of the recording and hammeter. The switch enables the operator to place the subject in circuit with the recording milliammeter or with a series of resistances for the measurement of body resistance. The dial directly above the switch indicates the subject's resistance when a balance has been established. The fundamental electrical concept employed in the principal circuit is that of two balanced electric circuits, the box containing a very complex circuit and the subject the second and more simple circuit. Any disturbance in the electrical balance is indicated by the check meter and is recorded on the milliammeter. The milliammeter chart is clock-driven and can be varied according to the requirements of the experiment. In work on the emotions we generally employ a chart speed of threequarter inch per minute.

Amplification was one of the vexing problems. We had several types of amplification and finally settled on a system of rectification and amplification which would be applicable for the majority of cases with which we had to deal. As employed in the present arrangement, the amplification is two-stage and ranges from 0 to 350. This enables us to obtain maximal scale deflections for a subject whose resistance is 100,000 ohms. With resistances less than this amount, the deflections are kept on the graph, which is  $4 \frac{1}{2}$  wide, by means of the shunt. The middle dial directly under the check meter affords another means of increasing the sensitivity of the instrument or of controlling the deflections of the recording galvanometer.

The instrument, as shown in Figure 1, has been employed for a little more than a year. When we were satisfied with the sensitivity of the instrument, we proceeded to investigate instrumental errors due to current fluctuation, lag of the recording needle due to friction, hysteresis and heating effects. We finally placed all resistance units outside of the box represented on the left so that the amplification unit would not be interfered with by heating effects. The amplification unit as we employ it at present, is a screened unit.

The first work we completed with the apparatus was an investigation of the differentiation between emotion and sentiment. the results of this experiment were read at a meeting of New York Branch of the American Psychological Association, held at Fordham University last April. We were able to show that there was no statistical significance between intensity of sentiment and degree of physiological concomitance. There is no relation between intensity of sentiment and intensity of the sensory accompaniment. This study enabled us to present a new theory of affective reactions. We inferred from our study that feeling, or that which we interpret as pleasure or unpleasure, is a basic activity of the affective order. Emotions and sentiments are specific instances of feeling. Emotional reaction occurs when there is feeling with a predominant sensory factor. Sentiment is feeling with a predominant intellectual factor. In sentiment, feeling is not necessarily accompanied by the same amount of organic or physiological changes which are present in emotional reaction.

We had employed the instrument to detect emotinal changes which accompanied deception. Considerable discussion was brought to bear on the applicability of an instrument of this type in actual criminal circumstances. This summer we decided to investigate the reliability of the instrument in criminal situations. We planned, however, to develop a laboratory situation which would furnish a very close approximation to a criminal situation. We believed that a procedure of this type was absolutely necessary in order to establish the reliability of the instrument before it should be applied in any detailed investigation of criminal activity. In the experiment we employed 50 groups of college and graduate students, male and female. Each group was divided by drawing lots into two sub groups. The first sub-group in each test was presented with a closed box which contained a valuable article, a twenty dollar bill, an expensive watch, jewelry or perfume. The instructions given this group were the following: I would like you to con-When I leave the sider that you three have conspired to steal this box. This article room, open the box and you will discover a valuable article. cannot be divided among you three. So, draw lots. And the winner of the draw will take the article enclosed in this box. Make this draw after I have left the room. Subsequently, I shall ask you questions. All members of this group were instructed to deny personal guilt, any knowledge of the guilty person and to deny possession of the article in question. The responses to all other questions were to be truthful. A final condition was If the person who won the draw and so possessed the article in placed:

question succeeded in deceiving the experimenter, he or she could keep the article. If the experimenter discovered the guilty person, this person would be obliged to perform a penalty to be named by the experimenter after the whole group had been tested. The second sub-group in each test was unaware both of the guilty person and of the article taken by the guilty person. Hence in each test our subjects fall into three groups:

a. the person who took the money or jewelry or the watch or other article;

b. the person who knew both what was taken and who the guilty person actually was;

c. the controls, those who knew neither what was taken nor who the guilty person actually was.

The results of the experiment were rather satisfactory. Forty-nine of the fifty guilty persons were detected by our procedure. Of these fortynine, nine were discovered on a re-examination, but in each of these nine cases there was definite evidence of either complicity or guilt on the first test. In the accomplice group of eighty-six, sixty-four or seventy-four per cent were definitely established on the first test to be accomplices and not guilty persons. In all but two of the remaining twenty-four, the fact of complicity was established by second tests.

There were ninety-one controls utilized in the fifty group tests, eighty-two of this number were established on first tests to be innocent. Startle effects and the limited number of questions we employed most probably interfered with better results on first tests, both here and in the complicity group. The ninety per cent efficiency for the control group was increased to one hundred per cent by reexamination.

Seventy-five per cent of the subjects employed in this study were used in four or more group tests. Our object in utilizing these subjects so often was to test the value of our technique in the conditions of possible diminished emotional response due to the fact that the subjects might become familiar with the procedure. In some of these cases, the responses to the critical questions showed a diminished reaction, but only where all reactions of the subject to critical and non-critical questions were proportionately diminished.

During the progress of the experiment we decided to check our results against those furnished by a Keeler Polygraph. We wished to contrast the relative reliability of our instrument and the polygraph. We utilized twelve groups which involved sixty-two persons, each one of whom was hooked up to both instruments during the process of examination. The comparison of our instrument and that of the polygraph revealed the following:

A. Where we had 100 percent correct in the detection of guilt, the polygraph established 54 percent doubtful and 46 percent negative.

B. In the accomplice group we had 85 percent correct on first tests where the polygraph had 92 percent, which were either negative or doubtful.

C. In the control group we had 95 percent correct on first tests where the polygraph had 47 percent correct. Polygraph 1984, 13(4) 343

# A Recording Psychogalvanometer

We do not wish to put any final value on these differences. Before presenting a final conclusion we should like to spread the study over a wider range of cases. The results of this study were presented before the September meeting of the American Psychological Association at Hanover.



Figure 2

Figure 2 is a record of a guilty person in this experiment. The short vertical lines on the top of the graph indicate the times at which questions were asked. The vertical marks which are lettered K, G, and P are critical questions. The graph reads from right to left. Other questions are non-critical, that is, have no bearing on the matter for what the subject is being particularly examined. At K the subject was asked if he knew who took the money. At G the subject was asked if he took the money. At P the subject was asked if he had the money on his person or had it put away in some

other place. There are many interesting features of emotional reactions portrayed on this graph. Space will permit the indication of merely a few. This subject had a great deal of emotional disturbance responding to the first question. The second and third questions show diminished emotional reactions. Note the contrast of the deflections coincident with the answers to K, G and P with the deflections coincident with the responses to the nonsignificant questions. The subject in this case denied knowledge and guilty and possession. The record clearly shows that he was lying in his responses to all three. The last four deflections indicate an increased resistance on the part of the subject which is an additional significant factor. It manifests very generally the presence of a release from the emotional strain which indication makes the preceding readings extremely significant.

The instrument has been employed in several instances of actual crime detection with invariable success. The records of these cases would need a special article. But it is important to note that in the investigation of emotional reactions, the sentivity of the instrument is only the starting point for accurate investigation. We constantly employ in this work all the experience that has mounted up in the coarse of the last four years. The graph in Figure 2 presents an almost classic reaction type. But not all records are as clear-cut as this one. There are many variations in the initial, in the middle and in the final phases of emotional reaction. As time permits we plan to employ the technique we have developed in the investigation of emotional reaction types with the object of discovering whether or not there is a consistent incidence of emotional reaction referable to physical and physiological typology. There are several other problems being contemplated, the chief of which are the value of an instrument of this type as an objective control of introspection and a study of its possibilities in the testing of candidates for various positions where emotional control and ability to change judgments in complex emotional situations are necessary. We plan also to continue some work already begun on the discrimination of feigned from real delusions.

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Polygraph 1984, 13(4)

345

# NEKTERE PROBLEMY SOUDNI PSYCHIATRIE

By

Doc. MU Dr. Miroslav Dufek, CSc.

SUMMARY OF THE BOOK

Translated by

Gordon H. Barland, Ph.D.

[TRANSLATOR'S NOTE: This is a translation of a German summary at the end of Dr. Dufek's book. It is not known who wrote the summary, nor is it known how it came to be written. The summary appears to have been written by a person with native fluency, yet in places the phraseology is unusually awkward. I suspect that the German summary was a literal translation of the Russian summary which may have been written by a person not fluent in Russian. In an effort to render the translation of the German summary as understandable as possible, I have occasionally had to take liberties with the German.]

In the first chapter the author explains the status of forensic psychiatry and its relation to criminalistics. He presents his working definition of forensic psychiatry, which he views from an interdisciplinary standpoint, the primary application of which is the examination of the psychically disturbed personality of the delinquent. The author emphasizes in his working definition the preventative health aspects from the standpoint of the socialist health system and socialist law. Criminalistics and forensic psychiatry are coupled primarily through their common goal -- the struggle against punishable activity -- even though they deal with independent areas.

In the second chapter of his work he draws upon the analysis of 300 files which were prepared for judicial requirements. The author assumes a critical attitude to the generally accepted view of the activity of the forensic psychiatric expert.

The next section presents the author's analyses of the literature concerning polygraph examinations and the components of emotion. He details his own rich experimental data obtained through the examination of 300 volunteers. The research results of the author are very promising and lead to the conclusion that when polygraph examinations are conducted by a trained specialist under appropriate conditions they can in many cases contribute to the criminalistics technology. However, the polygraph must absolutely not be used to provide evidence for conviction based on the character of a person. Rather, it provides the means of examining alibis, contacts, and statements.

## Book Summary

The third chapter deals with the necessity of the proper selection of colleagues for criminal investigation, for this is an exceptionally exacting service. The author puts forward his experiences from his own practice, with selected reports and their positive outcomes.

In the third section the author deals with the circumstances which promote the emergence of criminal activity. Here he draws especially upon the first comprehensive study of criminal recidivism by the state, in which the author himself participated, particularly in the psychiatric portion of the examination.

In the section concerning forecasting, he helps -- in harmony with the present opinion of Soviet science -- to promote the correct view of the scientific forecast of criminal activity and submits his first research findings.

The fourth chapter contains plans for the fulfillment of the measures of society against criminal activity. He stresses the necessity of establishing an institute of forensic psychiatry, which would systematically train psychiatric experts and rigorously maintain their scientific competance at a high level. He advocates research on the questions of differentiating between types of convicts, determining the best protective treatment, post-penitentiary problems, and how to integrate the exconvict back into the work force.

The author also stresses the importance of solving a series of forensic psychiatric problems involving the exposure, examination and prevention of criminal activity by psychically disturbed persons. It is particularly important to pay increased attention to the various types of protective measures and the problems of forecasting criminal activity, particularly by recidivists. The reporting of both positive and negative factors has a considerable effect not only on the selection of the types of corrective measures and the decision about the conditions for release from imprisonment, but also on the formation of suitable measures within the framework of the individual and the general prevention.

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Polygraph 1984, 13(4)

347

# CHEMISTRY AND CRIME From Sherlock Holmes to Today's Courtroom Washington, D.C.: American Chemical Society Edited by Samuel M. Gerber

## A BOOK REVIEW

## By

## Ronald M. Furgerson MS in Forensic Science

The series of articles comprising the chapters of this book will primarily be of interest to Sherlock Holmes buffs and those interested in an overview of forensic science, especially the role of chemistry, in modern law enforcement. (No mention is made of polygraph.) The book is brief, 135 pages, attractively illustrated and formated, and contains thorough references, bibliographies, and indexing. Readers lacking a solid foundation in chemistry can expect rough going in some of the chapters, although the book may still prove valuable and enjoyable to those electing to skim past the more detailed and complex portions.

The first three chapters relate to chemisry in fictional crimes. The remaining six discuss the present state of the art. Two of these describe recent changes in the field of forensic science and provide definitions, explanations, and a short history of forensic science and criminalistics; two deal with bloodstain analysis (one on case histories and one on serological and elecrophoretic techniques); and one with the chemical composition and analysis of bullets. The final chapter, which is based on original research supported under a National Institute of Justice and the Forensic Sciences Foundation grant, sets forth results of a 2-year study on the kinds of physical evidence collected and used in typical criminal investigations.

<u>Chemistry and Crime</u> is published and available through the American Chemical Society, 1155 Sixteenth Street, N.W., Washington, D.C. 20036, telephone (202) 872-4404. The cost in the United States and Canada is \$19.95; export \$23.95.

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## Book Reviews

FORENSIC HYPNOSIS The Practical Application of Hypnosis in Criminal Investigations Springfield, Illinois: Charles C. Thomas, 1981 353 pp. Illustrated, name index, topical index By Whitney S. Hibbard and Raymond W. Worring

## A BOOK REVIEW

#### By

#### Gordon H. Barland, Ph.D.

This is by far the best book yet published on forensic hypnosis. It is concise, yet thorough. It is easy to understand, yet is not superficial. It contains enough explanations and details to be extremely useful, yet it never bores. And above all else, it is objective and scholarly. It was intended as the basic text in a 60-hour course in forensic hypnosis, and in that it succeeds admirably.

It starts off by detailing the differences between clinical and forensic hypnosis and discussing the issue of whether forensic hypnotists should be mental health professionals or investigators. Chapter 2 discusses the nature of suggestion and factors which influence it. It also lists some of the dangers of hypnosis and advises when not to use it. The next chapter mentions the critical elements and principles of hypnosis, and discusses the various phenomena that can be elicited under hypnosis. Chapter 4 is the longest one (110 pages), and leads the student step by step through various induction and deepening procedures, with verbatim examples. It gives detailed instructions for determining the depth of hypnosis, and how to handle various problems that can arise. For the person who wishes to actually hypnotize people, this chapter is the core of the book.

Chapter 5 was contributed by Richard King, a Captain in the Los Angeles Police Department. He discusses areas of concern to the police-hypnotist, such as how to set up a hypnosis program within the department, problems the new police-hypnotist encounters, how to testify in court, etc. Chapter 6, dealing with the legal aspects of forensic hypnosis, was contributed by an attorney, Daniel Falcon. It details the various court cases which have affected the acceptibility of hypnotically-obtained testimony by the judicial system.

The final chapter was the most interesting one for me. It raises various topics of especial interest for the investigative use of hypnosis. It discusses the research on whether hypnosis can cause people to commit crimes they would not otherwise commit; whether hypnosis can be induced without the subject's awareness or against his will; and controls that can be used to help determine whether a subject is simulating hypnosis or is lying under hypnosis. The authors also present an extended discussion of the nature of memory and recall, and objectively review the literature on the effect of hypnosis upon recall. Of particular interest to polygraph examiners is the all too brief section on hypnosis and the polygraph.

Although the authors are not polygraph examiners, it is apparent that they have worked with examiners in their role as forensic hypnotists, for their discussion displays considerable insight into the polygraph.

This book is recommended for all polygraph professionals who may become involved with forensic hypnotists in the scope of their work. It will give them a good foundation for understanding investigative hypnosis and will permit them to work effectively with those investigators who use it.

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HYPNOSIS AND THE LAW Glendale, California: Westwood Publ. Co., 1981 219 pp. Illustrated. \$24.00. By Bradley W. Kuhns

# A BOOK REVIEW

## By

#### Gordon H. Barland, Ph.D.

This book is billed as "A training-manual for the forensic and investigative uses of 'trance' in law enforcement and legal practice." Its primary focus is on the use of hypnosis with crime victims and witnesses in an effort to obtain additional investigative information. The book is a brief "how to" manual aimed at the uneducated investigator, rather than a more thorough book aimed at the individual who wishes to delve beyond superficial levels. Thus, much of the book consists of a seemingly unrelated series of transcripts of portions of hypnotic sessions.

The role of hypnosis in criminal investigation is a very complex and controversial topic, yet Kuhns discusses neither the complexities nor the controversy. He does not discuss the theories of how memory is stored and retrieved or what factors can affect accuracy of recall. Kuhns does not mention any of the research on the accuracy of hypnotically-assisted recall, most of which indicates that significant errors may occur. The author does not mention any of the differences between therapeutic and forensic applications of hypnosis, one of which is the danger of confabulation. In one of the transcripts of a hypnotic session the hypnotist says, "Now you are going to be surprised and amazed -- that you are going to be able to see him very clearly and plainly even though you did not have your contacts in that night. Watch how clear and vivid that image becomes as you begin to describe it. It will be as though you had your contacts in and could see him as clearly and plainly as ever"(p. 175). That type of instruction is dangerous, for it invites errors by increasing the possibility of confabulation. Another significant omission is the failure to mention the guidelines required for forensic hypnosis sessions by the federal government, such as the necessity of using hypnotists with professional training and videotaping the entire session so that it can be reviewed by other hypnotists.

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Book Reviews

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The final chapter of the book is a hodge podge of items, including an award presented to Dr. Kuhns, two letters of commendation, various newspaper articles concerning criminal cases in which hypnosis was used, and reprints of two papers, neither of which deals with hypnosis. One of them is entitled "A view pertaining to human behavior" and the other is "Physiological functions of the brain and body." No attempt was made to try to relate these varied items to each other, and one is left to wonder why they were included.

This is a book which will be of interest to polygraph examiners who know nothing about forensic hypnosis and wish to learn a little, especially if they are not particularly concerned about syntax and do not wish to be burdened with details.

HOW TO KEEP FROM BEING ROBBED, RAPED & RIPPED OFF A Personal Crime Prevention Manual for You and Your Loved Ones Washington, D.C.: Acropolis Books, Ltd., 1983 \$10.45 postpaid, 2400 - 17th St., N.W., Washington, D.C. 20009 By Richard A. Fike

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By

## Norman Ansley

This is a nuts and bolts book which describes and illustrates measures to take to secure a house and office, reporting suspicious events and crime, establishing a neighborhood watch program, the value of a dog for protection, recognizing threats in various settings, consumer fraud, the law and self defense, the use of weapons, and similar matters. This is the kind of book you would expect to see on a newsstand but not in a professional libr-As an absolutely basic manual for the uninformed, it succeeds. If arv. someone wants a book on how to secure their home and what measures they can take to be safe, this is as good as any and better than most. If you are to give a lecture to the PTA or a neighborhood group on crime prevention, going through this work will give you a good list of topics, and lots of practical Polygraph 1984, 13(4)

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351

Abrams, Stanley (author) 198-201: 326-332 Abstracts - Control Question Techniques, Laboratory 87-106 Abstracts - Field 64-86 Abstracts - Guilty Knowledge and Peak of Tension, Laboratory 111-128 Abstracts - Laboratory 87-128 Abstracts - Relevant/Irrelevant Technique 107-110 Abstracts of Research 64~128 "The Accuracy and Consistency of Polygraph Examiner's Diagnosis" 77 "The Accuracy and Utility of Polygraph Testino" 1-143 "Accuracy Demonstrations, Threat, and the Detection of Deception: Cardiovascular, Electrodermal, and Pupillary Measures" 92 Adams, Henry E. 52, 53, 60, 61, 109-110 Admission of Polygraph Results 34

Admissions - see Confessions

Ainsworth, D. (co-author) 177-192

Alcohol 177-192

"Alcohol and the Psychophysiological Detection of Deception" 177-192 Polygraph 1984, 13(4) Alcohol, Tobacco & Firearms Administration 5 Alcoholics 21, 22, 47, 95-96 American Academy of Polygraph Examiners 66 American Bar Association Journal 8N American Journal of Psychology 68 American Polygraph Association 31 "Analiza Przestanek Diagnozowania W. Badanich Poligraficznych" (The Analysis of Diagnostic Premises in Polygraph Examinations) 86 "Analysis of Agreement in Polygraph Charts" 193-197 Analysis of Research 58-63 Ansley, Norman 2 Ansley, Norman (author) 166-176 Ansley, Norman (book reviewer) 279; 280-281; 351 Arasuna, Masana 50; 51; 57; 120 Arther, Richard O. 32 Armed Forces Security Agency -Also See National Security Agency 11; 18 Arson 3; 9; 10

Ash, Philip, Ph.D. 26: 27: 77 Assault 9:10 "An Assessment of Lie Detection Capability" 79 Atomic Energy Commission 10; 24 Attitudes Toward Polygraph Tests 12: 23-27 Australia 12 Background Investigations 4; 16; 17; 18-22; 24; 50; 87 Backster School of Lie Detection 47; 95; 97 Backster Zone Comparison Technique 31; 44; 47; 50; 95-96; 97; 98 Balloun, Kristen D. 55; 57; 111-112 Balloun and Holmes, 1979 55; 57; 111-112 Bar-Ilan University 72 Barland, Gordon H., Ph.D. 2; 33; 35; 36; 41; 43; 45; 50; 51; 53; 58; 60 Barland, 1981 50; 53; 60; 87-89 Barland, 1982 36; 45 Barland, Gordon H., Ph.D. (author) 346-347 Barland, Gordon H., Ph.D. (book reviewer) 349-350 Barland and Raskin, 1975 45; 51; 58; 60; 62

Barland and Raskin, 1976 35; 38; 41; 43; 59; 60; 64-• 65; 82 Barland and Raskin, 1978 33 Barnett 3; 12 Barton, Michael F. (book reviewer) 279-280 Base Rates for Lying - See Guilt-Innocence Behavior, Non-Verbal 313-320 Beijk, J. 60 Beijk, 1980 60 Bell, William H. 2 Ben-Ishai, Akiva 37; 44; 66 Ben-Ishai, 1962 37; 44; 66 Ben-Shakar, Gershon 57; 69 Ben-Shakar, 1977 57 Ben-Shakar and Lieblich, 1982 57 Bersh, Philip J. 31; 35; 36; 58; 61; 62; 63; 67 Bersh, 1969 31; 35; 36; 58; 61; 62; 63; 67 Biofeedback 86; 119; 121 Biofeedback, Visual 86

Biting Tongue 97-98 Bitterman, M.E. 37: 68 Bitterman and Marcuse, 1947 37: 68 Blind Analysis of Charts 28: 33: 36: 37: 38: 39: 40: 41: 42; 43; 44; 46; 47; 48; 51; 59; 62; 64-65; 69; 70; 71; 73; 74; 84: 97-98: 101 Blood Pressure - See Cardiovascular Bloomingburg, Frank 2 Blum, Richard H. 52; 53; 60; 107-108 Blum and Osterloh, 1968 52; 53; 60; 61; 107-108 Bogus Pipeline 55 Boisvenu, Guy A. (co-author) 297-312 Book Reviews 202-203; 278-280; 348-351 Book Summary 346-347 Boyce, Christopher 12 Bradley, M.T. 47; 50; 55; 60; 92 Bradley, M.T. (co-author) 177-192 Bradley and Janisse, 1981 47; 50; 55; 60; 62; 92-93 Breen, John P. 56; 57; 121-122 Bribery 76

Brokaw, J.R. 52: 53 Buckley, Joseph P. 26: 27 Bureau of Investigation (FBI Predecessor) 8 Burglary q California Psychological Inventory 104 Camp Greenleaf, U.S. Army 10 Camp Wetherill, U.S. Army 10 Card Test - See Stimulation Tests Cardio Activity Monitor 44 Cardiovascular Recordings 33; 36; 39; 40; 41; 44; 45; 46; 47; 48; 49; 50; 52; 53; 56; 64; 68; 69; 71; 74; 76; 77; 78; 80; 82; 85; 87; 90; 91; 94; 97; 99-100; 101; 106; 117; 126-127; 128 "Cardiovascular Responses on Innocent Persons to Criminal Interrogation" 68 Carlucci, Frank C. 11 Carlucci Memorandum 11 Capriotti, R. 50 Case Data, Influence on Tests 33; 35; 36; 38; 40; 41; 44; 46; 59; 60; 74; 85; 101 Case Dispositions (Criminal) 33; 36; 38; 44; 64-65; 72; 73: 74

Brisentine, Robart A., Jr. Polygraph 1984, 13(4)

Cases - Criminal Investigations 7~10 Central Intelligence Agency 5; 11; 18; 30 Charles University (Czechoslovakia) 57: 115-116: 117 Chart Analysis, Blind - See Blind Analysis of Charts Chart Analysis, Field 37; 52; 53; 67; 68; 69; 70; 71; 74-75; 76; 77; 80; 82; 84; 85; 87-89; 90-91 Chart Analysis, Numerical - See Numerical Scoring Chart Evaluation 193-197 Chart Interpretation 193-197 Chart Scoring 263-266 Charts. Number Obtained 46; 47; 49; 50; 60; 64; 69; 74; 87: 89; 95; 97; 99; 101 Chatham, Russell 24 Chemistry and Crime, reviewed 348 Child Molesting 8: 17 CID - See U.S. Army Criminal Investigation Command Clearance - Q 24 Clearances, Granted or Denied 11; 17; 18-23 Clecklez, 1964 99 Clinical Judgments 33; 42; 44; 59; 60; 61; 62

Code Book Theft 10 Combination of Indices 42: 44: 48: 50: 51: 57: 93 Communications, U.S. 12 Communist Organizations 12: 16: 17: 21: 22 Communist Party 10-12 Communist Party, British 12 Compromised Classified Information 11; 12; 16; 21; 22 Conahan, Frank C. (author) 231-243 Confessions 3: 7-11: 13-17: 18-23: 29: 34; 61; 64; 67; 69; 72; 73; 74; 78; 80 Confessions as Proof of Validity 34; 73; 74; 76; 77; 78; 79; 80 Contractors, Defense 14 "A Contribution on the Problems of Polyoraph Examinations" (Tr. from Czech.) 115-116 Control Question Tests (General) 31-32; 33; 34; 40; 44; 45-53; 57; 58; 59; 64; 66; 67; 69; 74-75; 76; 77; 80; 82; 83; 84; 86; 87; 104-105 Control Questions, Exclusive 31; 47; 52 Control Questions, Non-Exclusive 31: 47 Cornell University 68

Correa, Eileen J. 52; 53; 109-110 Correa and Adams, 1981 52; 53; 60; 61; 109-110 Cost analysis 19 Counterintelligence 223-224 Counterintelligence Screening Test (CIST) 17; 32 Counterintelligence Testing 3; 5; 6; 7; 10-15; 17 Countermeasures 45; 47; 48; 54; 97-98; 101 Credit 20 Crime and Social Deviance 72 Crimes - See Specific Offenses Crimes Against Persons 8; 9; 10; 17; 74; 76 Crimes aGainst Property 9; 17; 74; 76 Criminal Investigations 6-9; 17; 62; 63; 64; 66; 67; 68; 72; 79; 80 Criminal Suspects 6-10; 74-75; 76; 77; 78; 79; 80; 82-83; 84; 85-86; 120 Cultures, Various 3 Czechoslovak Criminalistics 115-116 Czechoslovakia - See Dufek, M. and Kronbergerova, J. Daie, Netzer 33; 36-37

Davidson, P.O. 54-55: 113-114 Davidson, 1968 54-55; 113-114 Davidson. 1982 44 Dawson. Michael E. 47 Dawson, 1977 47 Dawson, 1980 47 "Deception Tests with Juvenile Delinguents" 78 Defection to Soviet Union 15 Defense Investigative Service 20 Degree - Phony 10; 16 Delta College Polygraph Workshop 31 Delusional Psychotics 53 Department of Defense (author) 1-143 Detection of Deception 246-250 "Detection of Deception in 1984: In Defense of Preemployment Polygraph Testing" 246-250 Diazepam 297-312 Directed Lie Techniques 87-89 Divulgence of Classified Information 11; 16; 21; 22

Drug Abuse 9: 17: 21: 22: 84 Drug Enforcement Administration 5 Drug Usages 9; 17; 22; 94; 297-312 Drugs, Illegal 9; 17; 21; 22 Drugs, Legal 297-312 Dual Track Cases 20 Dufek, Miroslav 57; 115-116; 117 Dufek. 1969 57; 117 Edel, Eugene 41-42; 53; 71 Edel, Eugene (co-author) 193-197 Edel and Jacoby, 1975 41-42; 53; 71 Edwards, Robert H. 33: 34: 73 Edwards, 1981 33; 34; 73 "Effect of Feedback of Physiological Information on Responses to Innocent Associations and Guilty Knowledge" 121-122 "The Effect of Propranolol on Polygraphic Detection of Deception" 94 Effect on Prosecution - Also see Edwards, 1981, Peters, 1982 "The Effect of Selected Variables on Interpretation of Polygraph Records" 74

"Effects of Attention as Indexed by Subsequent Memory on Electrodermal Detection of Information" 123-125 "Effects of Diazepam and Methylphenidate on the Electrodermal Detection of Guilty Knowledge" 297-312 "Effects of Information and Practice on Detection of Deception" 101 "Effects of Level of Socialization on Electrodermal Detection of Deception" 104-105 "Effects of Repeated Examinations on the Ability to Detect Guilt with a Polygraphic Examination: A Laboratory Experience with a Real Crime" 111-112 "The Effects of Simple Physical Countermeasures on the Physiological Detection of Deception" 97-98 Elaad, Eitan 33; 37; 72 Elaad and Schahar, 1978 37; 69-70; 72 Electric Shocks 47; 54; 56; 92-93; 118; 124 Electrode Gel, abstract 281 Electrodermal Recordings 33; 36; 39; 40; 41; 44; 45; 46; 47; 48; 49; 50; 51; 52; 53; 54; 55; 56; 57; 64; 66; 69; 71; 74; 76; 77; 80; 82; 84; 85; 87; 90-91; 92; 93; 94; 97; 99-100; 102; 104-105; 106; 109; 111; 113; 115; 117; 118; 119; 120;

Electrodermal Recordings (cont.) 121-122; 123-125; 126-127; 128; 297-312 Embezzlement 9; 17 Emotional Involvement - See Motivation Emotions 270-278 Engel, B.T. 50 Engel, 1960 50 England 12: 14 ETTOTS 321-325 Espionage 3; 10-15; 17; 21; 22; 24 "An Evaluation of Field Techniques in Detection of Deception" 90-91 Examiner Qualifications - Experience 28: 39: 40: 41: 44: 45: 46: 47: 48; 49; 50; 51; 52; 53; 56; 60; 61; 62; 69; 71; 73; 74; 76; 77; 82; 84; 87; 94; 95-96; 97; 117 "Examiner Reliability in Polygraph Chart Analysis: Identification of Physiological Repsonses" 71 Examiners 3; 5; 28-31; 33; 39; 42; 45; 59; 61; 73; 76 Examiners, Interns and Students 5; 28-31; 40; 44; 45; 47; 49; 50; 51; 52; 60; 74; 76; 77; 95-96 Examiners - Standards 5 Exculpatory Examinations 6; 7; 8

"Experimental Experiences With the Use of Polygraph" (Tr. from Czech.) 117 "An Experimental Investigation of the Relative Validity and Utility of the Polygraph Technique and Three Other Common Methods of Criminal Identification" 106 Eyewitness Compared to Polygraph 49; 50; 106 The Falcon and the Snowman: A True Story of Friendship and Espionage 12 False Citizenship 15 False Complaints 8: 9 False Positive and Guilt - Innocence - False Negative Rates -Also See Individual Abstracts 19; 35; 58; 59; 60; 73; 82; 101 Falsified Forms 9; 15; 16; 21; 22; 87 Fascist Activity 21: 22 Fay-Long, Irene (author) 267-269 Federal Bureau of Investigation 5; 24; 31 Federal Bureau of Investigation Advanced Polygraph Studies Program 5; 31 Federal Government Usage 5-30 Federal Interagency Polygraph Committee 5; 31

Federal Interagency Polygraph Seminar 31 Federal Modification of Backster Zone - See Zone Comparison Technique Federal Polygraph Policies 231-243 Fedor, William 2 Feedback, False 90-91; 92 Feedback, Verbal, Following Stim Test 91; 92; 101 Felony Cases 3; 6-10; 21-22 Female Subjects ~ See Male/Female Subjects Field Studies 33-57 Finger Blood Volume 47; 55; 99-100; 101; 111-112 Finger Pulse Amplitude 47; 55; 98; 99-100; 101 Finger Pulse Volume, abstract 281 Fingerprints, Compared to Polygraph 49; 50; 61; 106 First National Conference on Scientific Interrogation in Criminal Investigation (Israel) 72 Fleming, Jonathan A. (co-author) 297-312 Foreign Nationals, Contact With 12-15; 16; 17; 21; 22

Forensic Hypnosis, reviewed 349 Forensic Science, reviewed 280-281 Fraud 9; 17 Friendly Polygrapher Proposition 82-83 Furgerson, Ronald M. (book reviewer) 348-349 Fuse, Louise S. 2 The Gallup Organization 153-165 Garwood, Marcia, Ph.D. 2: 50 GCHQ 12 Garwood, Engel, and Capriotti, 1982 50 Gatchel, Robert J. 45; 48; 62; 94 Gatchel, Smith and Kaplan, 1983 45; 48; 62; 94 General Question Tests - Also See Relevant-Irrelevant Tests 35: 67 German Agent 10 German Police 10: 30 Gestapo 10 Giesen and Rollison, 1980 57 Ginton, Avital 33; 36-37; 69

Ginton, Daie, Elaad and Ben-Shakhar, 1982 33: 36-37: 69-70 Global Chart Interpretation -See Chart Greatest Control -Scoring of Charts 50: 87-89 Ground Truth - See Validity, Criterion "The GSR in the Detection of Guilt" 118 Guertin and Wilhelm, 1954 44 "Guidelines for Understanding Nonverbal Behavior" 313-320 Guilt/Innocence 7; 17; 33; 34; 35; 36; 37; 38; 39; 40; 41; 43; 44; 45; 46; 47; 48; 49; 50; 51; 52; 53; 54; 55; 56; 57; 58; 59; 61; 62; 63; 64-65; 66; 67; 68; 69; 70; 72; 73; 74-75; 76; 77; 78; 79; 80; 82-83; 84; 85; 86; 87-89; 90-91; 92-93; 95-96; 97-98; 99-100; 101; 102-103; 104-105; 106; 113-114; 118; 123-125; 126-127 Guilty Information Tests 54-57; 115-116; 117; 123-125; 126-127 Guilty Information Tests - Criterion Validity 54-57; 115-116; 117; 123-125; 126-127 Guilty Information Tests - Reliability 57 Guilty Knowledge 297-312 Guilty Knowledge Techniques 54-57; 59; 62; 92-93; 102-103; 111-112; 113-114; 118; 119; 121-122; 123-125; 126-127 Guilty Person Test 54-57; 102-103; 104-105

Gustafson, Lawrence A. 57 Gustafson and Orne, 1963 57 Gustafson and Orne, 1965 57 Hammond, David L. 45: 47: 50: 51: 62: 95-96 Hammond, 1980 45; 47; 50; 51; 62; 95-96 Handwriting Identification, Compared to Polygraph 49; 50; 106 Hardy, James E. 2 Hare, R.D. 36; 45; 46; 51; 99-100 Heart Rate 48; 55; 76; 92-93; 99-100; 109; 111; 113 Heckel, R.V. 52; 53 Heckel, Brokaw, Salzberg and Wiggins, 1962 52: 53 Heckman, Ronald (co-author) 251-262 Helmich 3: 12 "Historical Reprint (1936): A Recording Psychogalvanometer" 340-345 History 6; 10-11; 62; 340-345 Hit and Run Driving 9 Hodes, Robert L. 97-98

Holmes. David S. 55; 57; 111-112 Homicide and Attempted Homicide 3; 8; 9; 10 Homosexual Activity 15: 17 Honts. Charles Robert 45; 48; 51; 62 Honts. 1978 45: 51: 62: 97-98 Honts. 1982 48; 51; 62; 97-98 Horvath, Frank 34; 35; 38; 39; 40-41; 43; 59 Horvath, Frank (author) 246-250 Horvath, 1971 34 Horvath, 1977 35; 38; 40-41; 43; 59; 74-75 Horvath and Reid, 1971 39, 76 Hostage Situations 17; 121-122 Hostile Intelligence Activities -Also See Espionage How to Keep From Being Robbed, reviewed 351 Hunter, Fred L. 39; 77 Hunter and Ash, 1973 39; 77 Hypnosis and the Law, reviewed 350 Iacono, William G. (co-author) 297-312 "The Importance of Listening in the Interview and Interrogation

Polygraph 1984, 13(4)

Process" 333-339 Inconclusive Results 10; 34; 37; 38; 39; 40; 41; 43; 44; 45; 46; 47; 48; 49; 50; 51; 53; 55; 64-65; 67; 70; 72; 73; 74; 77; 80; 83; 84; 85; 87-89; 90; 91; 94; 95-96; 100; 101; 106; 115 Indecent Exposure 9 "The Influence of Auxiliary Sources of Information in Polygraph Diagnosis" 85 Informants, Police 52; 107-108 Innocent Persons - Also See Guilt-Innocence 8; 9; 33; 34; 68; 79; 80; 82; 89 Institute for Defense Analysis 79 Institute for Juvenile Research. University of Chicago 78 Intelligence Operations 12-17 Intent Question 326-332 Interrogation Process 333-339 Interviewing 6; 333-339 "Interview With Lemoyne Snyder" 267-269 Intourist - Soviet Union 14 Investigations 3-4; 6; 8-17; 79 Israel - See Ben-Akiva, Ben-Shakar, Kugelmass, Lieblich and Ginton Israel, Eileen Joyce - See Correa, Eileen J. Israeli Police Department (National) 36; 57; 66; 69; 72 Jacoby, Jacob 41-42; 53; 71 Jagolian University (Poland) 44: 106 Janisse, Michael Pierre 47; 50; 55; 60; 62; 92 Japan - See Ohnishi, K., and Yamaoka, K. John E. Reid & Associates 39-41; 76; 85 Journal of Applied Psychology 67; 69; 71; 74; 102-103; 111-112; 113-114; 118; 119; 121-122; 123-125 Journal of Criminal Law, Criminology and Police Science 76: 107-108 Journal of Forensic Science 106 Journal of Police Science and Administration 77; 84; 85 Journal of Genetic Psychology 78 Journalist 15 Judge Advocate General Attorneys, U.S. Army 35; 61-62; 67 Judicial Disposition - Validity 33; 34; 35; 36; 64-65; 72; 73; 74; 80; 86 Juvenile Criminal Suspects 33; 78 Kaplan, Norman M. 94

Kampiles 3; 12 Keeler Institute 6: 30 Keeler, Leonarde 6: 32 Keeler Technique (R/I) - Also see Relevant-Irelevant Technique 32 Kircher, J.C. 101 Kleinmuntz and Szucko, 1982 40; 43; 44; 48; 50; 59; 60 Krapohl, Donald (co-author) 251-262 Kronbergerova, Jana 57; 117 Kronbergerova and Dufek, 1969 57; 117 Kugelmass, Sol 57 Kugelmass and Lieblich, 1968 57 Laboratory studies 45-47; 58; 62; 87; 107-108; 109-110 Lieblich, Kugelmass, and Ben-Shakar, 1970 57 Lieblich, Naftali, Shmueli, and Kuqelmass, 1974 60 Linehan, John G. 11 Listening 333-339 Lykken, 1959 54; 55; 56; 57; 118 Lykken, 1960 54; 119

Polygraph 1984, 13(4)

362

Lykken, 1979 35; 36; 38 Lykken, 1981 34: 35: 36: 38 Lyon, Vern W. 33; 78 Lyon, 1936 33; 78 McKinnon, Murlene (author) 313-320 MacNitt, 1942 37 Male/Female Subjects 33; 64; 89; 97-98; 104-105; 106; 109-110; 111-112; 115-116; 117; 118; 119; 121; 123-125; 126-127; 128 Marcuse, F.L. 68 Marcy, Lynn 32 Marston, William Moulton 10 Marxist 14 Matsuno, Katsunori 50-51; 120 Memory 102-103 Mental and Nervous Disorders 21: 22 Meprobamate 126-127 "Meprobamate Reduces Accuracy of Physiological Detection of Deception" 126-127 Methylphenidate 297-312

Miner, Edgar M. (author) 333-339 Ministry of Health, USSR 15 Misdemeanors 9 Missile Officer, U.S. 13 Miyake, Yoichi 57 Miyake, 1978 57 MMPI 64: 111-112 Modified General Question Technique (MGQT) 32; 35; 64 Moore, Lane A., Jr. (co-author) 193-197 Moss Committee, U.S. Congress 30 Motivation of Subjects, Experimental 45-57; 58; 59; 62; 87; 90-91; 92; 94; 95; 97; 101; 102; 109-110; 113-114 Mullenix and Reid, 1980 39 Murder - See Homicide Murphy, Vickie T. (book reviewer) 202-203 Muscle Movement 76; 97-98 Muscle Tension 97-98 Nachshon, Israel 72 National Agency Check 4

National Institute of Law Enforcement and Criminal Justice. U.S. Department of Justice 64-65: 82-83 National Institute of Police Science, Japan 120 National Security Agency Advanced Polygraph Screening Techniques Course 28: 31 National Security Agency, U.S. Department of Defense 2; 5; 6; 9; 10; 11; 16; 18-23; 25; 28 National Security Decision Directive Number 84 11; 84 Nazi Party 10-11 Nektere Problemy Soudni Psychiatrie, summarized 346-347 Nichols, Bill (author) 217 Nonverbal Behavior 313-320 Northwestern University Crime Laboratory 6 Nuclear Power Plant 15 Numerical Scoring of Charts 33; 34; 35; 36; 37; 38; 41; 43, 44-45; 46; 47; 48; 49; 50; 51; 53; 54; 55; 56; 57; 59; 62; 64-65; 66; 69; 70; 80; 82; 86; 87; 90; 92; 94; 95-96; 97-98; 99-100; 101; 111-112; 113-114; 118; 119; 120; 121; 128 Oak Ridge, Tennessee 10: 24 "The Objective Analysis of Physiologi-

cal Indices in the Field of

Ohkawa, 1963 57 Ohnishi, Kazuo 120 Ohnishi, Matsuno, Arasuna, and Suzuki, 1976 50-51; 57; 120 Orlansky, Jesse 79 Orlansky, 1962 79 Orne, Emily Carota 123-125; 126-127 Orne, Martin C. 49-50; 56-57; 82-83; 104-105; 123-125; 126-127 Osaka Prefecture Police Headquarters. Japan 120 Osterloh, William 52; 53; 60; 61; 107-108 Otto, John E. (author) 244-245 Overview 3-4 Panel Decisions 35; 36; 64-65; 67 Parachute Sabotaged 8 Passing the Pre-Employment Lie Detector Test, reviewed 202-203 Pd Scale MMPI 111-112 Peak of Tension Techniques (P.O.T.) 32: 54-57: 59: 68: 86: 104-105; 115-116; 117; 120

Detection of Deception"

120

Pease, Philip T. (author) 218-230 Penile Plethysmograph 198-201 "The Penile Plethysmograph: A New Transducer Used in Detection and Therapy With Sexual Deviation Cases" 198-201 Peters, Robert B. (author) 321-325 Petroleum Plants 24 Perry, Bradley S. 56: 57: 121-122 Peters, Robert B. 33; 34; 80 Peters, 1982 33; 34; 80-81 Phannenstill, Richard J. 26; 27 Photographs - See Eyewitness Placebo 61; 126-127 Plethsmograph 198-201 Plethysmograph - Also See Finger Blood Volume, Finger Pulse Amplitude, and Cardiovascular 47; 55 Podlesny, John A. 45 Podlesny and Raskin, 1978 45; 47; 51; 55; 62 Poland - See Widacki, J. 86 Police Informants 52; 53; 60; 61; 107-108

"Polygraph" 73; 109-110; 128 "Polygraph and Prepublication Review Policies of Federal Agencies" 231-243 "Polygraph Examination as a Means for Detecting Truth and Falsehood in Stories Presented by Police Informants" 107-108 Polygraph Testing Techniques -See Techniques Postal Inspection Service 5 Preemployment Data Sheet 109-110 "Preemployment Polygraph Practices in the Private Sector: A Survey" 251-262 Preemployment Polygraphy, reviewed 279-280 Preemployment testing 246-250: 251-262 Prepublication Review Policies of the Federal Government 231-243 Prime Case 12 Propranolol 48; 94 Prostitution 9 Psychogalvanometer 340-346 Psychopaths 46; 47; 50; 51; 62; 95-96; 99-100; 111-112 Psychophysiology 90-91; 92; 99-100; 104-105
"Psychopathy and Detection of Deception in a Prison Population" 99-100 Psychotics 53 Pupillometry 48; 55; 92 Q Clearance 24 Quality Control 28-29; 60; 62 Quality Control, Federal 28-29; 60; 62; 63 "The Question of the Intent Question" 326-332 Questioning Between Charts 49; 50; 52; 53; 61; 102 Questions, Discussion with Subject 28; 60; 61; 64; 92 Rape 3: 8: 9: 84 Raskin, David C. 45; 99-100; 101 Raskin, 1976 41; 82-83 Raskin and Barland, 1976 83 Raskin and Hare, 1978 36; 45; 46; 51; 62; 99-100 Raskin and Podlesny, 1979 34 "Rationale for Scoring" 263-266 Recording, Audio and Video 29 Recording Psychogalvanometer 340-345

Recruitment Attempts - See Espionage References Cited 129-131 Reid, John E. 32: 39 Reid. 1980 39 Reid and Horvath. 1971 58 Reid Control Question Technique 32; 76; 85; 106 Relative Accuracy of Polygraph Examiner Diagnosis of Respiration, Blood Pressure, and GSR Recordings 84 Relevant-Irrelevant Techniques (R/I)10; 32; 33; 35; 50; 52; 53; 67: 68: 71: 78: 87-89: 107-108; 109-110 Relevant-Irrelevant Techniques, Criterion Validity 35: 52: 53: 67: 68 Relevant-Irrelevant Techniques - Reliability 53; 71 Reliability 37; 39; 40; 41; 43; 44; 51-52; 57; 74-75; 76; 77; 82-83; 84; 85; 90-91; 95-96; 97-98; 99-100 "Reliability of Chart Interpretation and Sources of Errors in Polygraph Examinations" 82-83 Reliability, Control Question Tests 51-52 "The Reliability of Polygraph Examiner Diagnosis of Truth and Deception" 76

Repeated Examinations, Effect of 111-112 "Report on a Survey of Methods of Operation and Accomplishments of Russell Chatham, Inc. Polygraph Program at Oak Ridge. Tennessee" 24 Reports of the National Institute of Police Science (Japan) 120: 128 Respiration Amplitude 98; 126-127 Respiratory Recordings 33; 36; 39; 40; 41; 44; 45; 47; 48; 49; 50; 51; 52; 53; 56: 64: 68: 69: 71: 74: 76: 77; 78; 80; 82; 85; 87; 90-91; 94; 97; 98; 99-100; 101; 102; 106; 109; 113; 117 "The Responding of Normals, Alcoholics, and Psychopaths in a Laboratory Lie-Detection Experiment: 95 Robberv 8; 9 Rovner, L.I. 45; 46; 62; 101 Rovern, Raskin, and Kirchner, 1978 45; 46; 62; 101 Sabotage 9 Sabotage, Industrial 76: 84 SCI Access 16; 21; 22; 23 Schahar, Esther 72 Science 126-127

"Scientific Interrogation in Criminal Investigation" 72 Scorina 263~266 Screening, General 3-4; 9-12; 16; 17-26; 29 Screening, Intelligence 3-4; 9-12; 14-15; 17; 18-23; 24; 25; 29; 30; 32; 63; 87-89 Screening, Preemployment 3-4; 9-10; 12; 14-16; 18-23; 25; 26; 29; 41; 52; 54; 60; 71; 109-110 Screening, Security 3-4; 9-12; 14-16; 18-25; 29; 30; 41; 61; 63; 71; 87-89 Screening, Security Interview (Without Polygraph) 23 Searching Peak of Tension Test - Also See Peak of Tension Test Security Commission, UK 12 Senate Testimony 166-176 Sex Crimes 8: 8: 17 Sexual Deviation Cases 198-201 Sexual Misconduct 76 "Selective Memory for Social Information, Alertness, and Physiological Arousal in the detection of Deception" 102-103

Polygraph 1984, 13(4)

"The Significant of Tears in Lie Detection" 270-278 Silent Answer Test 88: 118 Silesian University (Poland) 86 Silverberg, Ben A., Ph.D. 26: 27 Sky Phase (Questions) -Also See Backster and MGQT 31 Slowik. Stanley M. 84 Slowik and Buckley, 1975 39; 40; 84 Skin Conductance 49; 100; 101; 102; 104-105 Skin Potential 99-100: 128 Skin Resistance - See Electrodermal Smth, John E. 94 Snyder, Lemoyne 267-269 Socialist Legality (Czechoslovakia) 117 Socialization 104-105 Society for Psychological Research, Survey 153-165 Society for Psychophysiological Research - See Also Psychophysiology 97-98; 101 Sodomy 8

"Some Remarks on Polygraph Research" 66 Soviet Bloc Contacts 12-15: 16: 17: 21 Soviet Union 12-15: 21: 24 Stabbing . 10 "Statement of Norman Ansley, Chief, Polygraph Division, Office of Security, National Security Agency Before the Armed Services Commission, United States Senate, March 7, 1984" 166-176 Statistics 5; 6; 7; 9; 10; 16-26; 33-57: 59: 61: 65: 67: 68: 69: 70; 71; 73; 74; 75; 76; 77; 78; 79; 80; 82; 83; 84; 85; 86: 87-89; 90-91; 92-93; 94; 95-96; 97-98; 99-100; 101; 102-103 Stern, Robert M. 56; 121-122 Stern, Breen, watanabe, and Perry, 1981 56; 57; 121-122 Stilwell, Richard G., General, U.S. Army 2 Stilwelll, Gen. Richard G., USA (Ret) (author) 217 Stimulation Charts 40: 74 Stimulation Tests 40; 53; 69; 74; 87; 89; 90; 92; 99; 102; 104 Stimulus Repetitions 55; 57 Stipulated Polygraph Examinations 34; 80

Polygraph 1984, 13(4)

368

Subject Behavior 33: 36: 39: 48: 85: 98 Subversive Organizations 12; 16; 17; 21; 22 Suicide Attempts 21: 22 Summaries of Research 51: 64-128 Summers, Rev. Walter G., S.J. (author) 340-345 Survey 153-165; 251-262 Survey, Commonwealth of Virginia 73 "Survey of Members of the Society for Psychological Research Concerning Their Opinion of the Polygraph Test Interpretation" 153-165 "A Survey of Polygraph Evidence in Criminal Trials" 80-81 "A Survey: Reliability of Polygraph Examinations Conducted by Virginia Polygraph Examiners" 73 Survey of Examinees 23-27: 80 Suzuki, Akahiro 120; 128 Symptomatic Questions - Also See Backster and Zone Comparison 31; 87; 88 Szucko, Julian 40; 43; 44; 48; 50; 59; 60 Tables 5; 6; 7; 65; 70; 73; 75; 80; 81; 88; 90; 93; 94; 95; 96; 98; 99; 102; 103; 105; 106; 107; 109; 110; 111; 114; 118;

Tables (cont.) 122; 123; 124; 125; 126; 128 Tax Evasion q Tears 270-278 Techniques, General 31-32; 63; 87 Ten Years of "Polygraph", reviewed 279 Testimony 166-176; 217-230; 244-245 "Testimony of H.R. 4681, U.S. House of Representatives" 217-230 Thatcher, Margaret, Prime Minister 12 Theft 8; 9; 45; 68; 76; 84; 113 Timm, Howard W., Ph.D. 57 Timm, 1982 57 Training 3: 62 Training, Basic 28-30; 41; 45; 62 Training, Advanced 28-41; 62 Training - Countermeasures 97; 101 Trovillo, Paul V. 24 Unfit for Testing 18 U.S. Air Force Office of Special Investigations 2; 5; 6; 7; 23; 30

Polygraph 1984, 13(4)

- U.S. Army Also See Camp Greenleaf and Camp Wetherill
- U.S. Army advanced Polygraph Course 30; 31
- U.S. Army Central Clearance Facility 17
- U.S. Army Criminal Investigation Command 2; 5; 6; 7; 8; 9; 30
- U.S. Army Employees 15
- U.S. Army Intelligence and Security Command 2; 5; 6; 7; 17; 30; 87
- U.S. Army Judge Advocate General Attorneys 35; 61-62; 67
- U.S. Army 902nd Military Intelligence Group 87-89
- U.S. Army Military Police Report 79
- U.S. Army Polygraph School 5; 28-31; 87; 90
- U.S. Atomic Energy Commission -See Atomic Energy Commission
- U.S. Central Intelligence Agency - See Central Intelligence Agency
- U.S. Customs Service 5
- U.S. Department of Defense 2; 3; 5; 6; 7; 11; 12; 28; 29; 30; 61; 62; 63
- U.S. Department of Defense Joint Services Group on Lie Detection 67

- U.S. Department of Defense, National Security Agency - See National Security Agency
- U.S. Department of Defense, Select Panel on Personnel Security 11
- U.S. Department of Justice 5; 6; 64-65; 82-83
- U.S. Department of Labor (Anti-Racketeering) 5
- U.S. Department of State 12
- U.S. Marine Corps Criminal Investigations Division 5; 6; 7; 30
- U.S. Marshals 5
- U.S. Naval Investigative Service 2; 5; 6; 7; 9
- U.A. Postal Inspection Service 5
- U.S. Secret Service 5: 6: 30
- University of Chicago 78
- University of Houston Advanced Polgyraph Seminar 31
- University of North Carolina Polygraph Workshop 31
- University of Texas 94
- University of Utah 31; 64; 82-83
- USSR See Soviet Union
- Utility 5-31; 59; 61; 62; 63

Utilization of the Polygraph 5-32 Validation study of polygraph examiners judgement 67 Validity, Criterion 33-56; 61; 64-65 Validity, Field 33-44; 61 "The Validity of the Guilty Knowledge Technique: The Effects of Faking: 119 "Validity of the Guilty-Knowledge Technique: Effects of Motivation" 113-114 "The Validity of the Preemployment Polygraph Examination and the Effects of Motivation" 109-110 "Validity and Reliability of Polygraph Examinations of Criminal Suspects" 64 "A Validity and Reliability Study of Counterintelligence Screening Test" 87-89 Vasomotor Responses - Also See Plethysmograph 47; 101 Victims of Crimes as Subjects 80 Vietnam 10 Virginia Polytechnic Institute and State University 97-98 Virginia, Survey, See Edward, 1981 73

Waid, William 49; 50; 56; 57; 104-105; 123-125: 126-127 Waid and Orne, 1980 56: 57 Waid and Orne, 1982 56 Waid, Orne, Cook, and Orne, 1978 56: 123-125 Waid, Orne, Cook, and Orne, 1981 56 Waid, Orne, and Orne, 1981 49; 56; 102-103; 126-127 Waid, Orne, and Wilson, 1979 49; 50; 56; 57; 104-105 Waid, Orne, and Wilson, 1981 50 Washoe County Sheriff's Office (Reno, Nevada) 26 Watanabe, Takami 56; 57; 121-122 White House 12 "Why Errors Occur" 321-325 Wicklander, Douglas E. 39; 40; 85 Wicklander and Hunter, 1975 39; 40; 85 Widacki, Jan 44; 86 Widacki, 1982 44; 86 Widacki and Horvath, 1978 106 Widacki and Horvath, 1982 49

Wiggins, S.L. 52; 53 Wisconsin State Crime Laboratory 34; 80 Wygant, James R. (author) 263-266 Yamaoka, Kazumoba 128 Yamaoka and Suzuki, 1980 57; 128 Zovnic, Kathleen M. (author) 270-278

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Polygraph 1984, 13(4)

372