Detection of Deception:
Its Application to Forensic Psychiatry

BRIAN E. LYNCH, M.A.*

Introduction

The detection of deception, or "lie detection," as it is commonly referred to, has traditionally been a police investigative tool. More recently, however, the use of lie detection has expanded into the medical, legal and private business sectors at an ever-increasing rate.[1] More and more allied health professionals are utilizing the potential of the detection of deception in novel and useful ways. In general and forensic psychiatry, however, the application of lie detection methods to their needs has not been so dramatic. The rather slow growth of this technique in forensic psychiatry may be attributable to a reluctance by mental health professionals to view the detection of deception in any other light than as a police aid.[2] Many professionals fail to see the need or the potential of lie detection in a forensic assessment milieu. Furthermore, traditional definitions and conceptions of usage have limited its application to such a field. In addition, the general population has been given the overall impression, through the media and various other sources, that lie detection is a pseudoscience, a kind of mild interrogation procedure with little merit outside of police work. In part, this is a justifiable criticism, since lie detection has progressed in a rather backward fashion. That is to say, rather than being firmly entrenched in scientifically based theory and then developing a practical technique, the detection of deception has developed a technique first and is just recently attempting empirical validation.

Although criticisms of this sort are somewhat justified, progressive application of such a technique in many fields should not be restrained, due to a lack of understanding of its present function.

Lie detection encompasses basically two major equipment systems.[3] The first and most traditional is the polygraph, which generally, but not always, monitors respiration, cardio-vascular activity and electrodermal activity by the use of attached body sensors.[4] The second major equipment system in use today, the voice stress analyzer (VSA), is a relatively new addition.[5] Although there are several types of VSA's on the market, they are all designed to measure stress resulting from the monitoring of vocal activity, without the need for attached polygraph sensors. Lie detection without sensors would eliminate the confounding variable of sensor-induced artificial arousal.[6] The elimination of sensors, and hence the reduction of subject

---

*Mr. Lynch is Program Head, Department of Polygraphy and Voice Stress Analysis, Department of Forensic Psychiatry, Royal Ottawa Hospital, Faculty of Medicine, University of Ottawa.

discomfort, would permit a more relaxed interview style.

In theory, the preference for VSA's over polygraphs is obvious, but in practice, the reliability difference is definitely in favour of the polygraph. Markwart and Lynch suggest that field polygraph accuracy is approximately 90%, an estimation based on a review of the research.[7] In contrast, Podlesny and Raskin, following a review of the literature on VSA's, suggest that they barely exceed chance levels in detecting deception.[8] Although little work has been reported, there have been some efforts made to utilize lie detection procedures in psychiatric settings. Abrams has studied the use of polygraphic procedures with schizophrenics and retardates, while Borgen and Goodman and Reeves, using VSA's, have looked at anxiolytic drug effects and rational emotive therapy respectively.[9,10,11,12] Wiggins, in assessing voice stress in children, suggested that VSA's are yet another tool for studying stress and show promise in other areas of medicine.[13] To date, no other study has attempted to utilize both procedures simultaneously to assess stress. Therefore, for this reason and for reasons of reliability and validity, both the polygraph and a voice stress analyzer were used in the present study.

As stated earlier, conventional use of lie detection has been as an investigative/interrogative tool to facilitate the sorting of truthful and deceptive suspects. This situation rarely, if ever, is the sole reason for a forensic psychiatric assessment. In such an assessment, the key issue is usually one of fitness to stand trial, plea of innocence due to insanity, the issue of intent during the commission of the crime and/or whether the individual was fully cognizant of his actions.

In the past, forensic psychiatrists have had at their disposal an armament of clinical techniques, the resources of psychologists, social workers, and other allied health professionals, in arriving at a psychiatric evaluation. Unfortunately, these are often not adequate to tap the more subtle aspects of such psycho-legal issues as intentionality and extent of amnesia. It is in these particular cases and in many others that lie detection techniques can be an invaluable aid.

The present study was designed to illustrate the role that modern lie detection can play in a psychiatric assessment, in particular, the function it fulfills in assessing cases of homicide.

Method

The study consisted of a series of lie detection examinations given to 13 patients, 9 males and 4 females, accused of homicide and referred for psychiatric evaluation at the Royal Ottawa Hospital, Department of Forensic Psychiatry, University of Ottawa, Faculty of Medicine, over approximately a two and one-half year period. The patients ranged in age from 18 to 37, with a mean age of 26 years. The mean male age was 29 years, while the mean female age was 21 years.

The reasons for the examinations fell into four broad areas: (a) to test veracity or direct involvement in the offense; (b) to confirm degree of involvement in the offense; (c) to delineate issue or intent in the offense; and (d) to aid abreaction.

The examinations in general followed the Backster Zone Comparison Technique, which consisted of a structured pretest interview in which the

question sequence was reviewed with the individual. In addition to a review of the questions to be asked, an explanation of the test was given and a voluntary waiver form was signed by the patient. Every examination consisted of at least two polygraph chart runs in order that a proper determination could be reached. In addition, responses to question sequences were processed through the VSA. In the cases of deception, a post-test discussion was undertaken to try and ascertain the truth in the offense.

The equipment used in the study consisted of a voice stress analyzer (PSE-101) and a Lafayette Four Channel Datagraph with event marker (76102). Audio recording was done using a Uher 4000 Report I.C. tape recorder, a Uher M 136 dynamic microphone and Scotch AV-177 low-noise tape. The audio recording was processed through the PSE-101 at speeds of either 4.7 cm/sec. or 2.4 cm/sec., using either Mode III or IV. Standard lie detection measures were taken with the polygraph. Thoracic respiration was measured using a bellows-type pneumograph with a photoelectric transducer (LaFayette, 76007). Strength and rate of pulse beat and peripheral blood volume were measured by a photoelectric plethysmograph (LaFayette, 76004) attached to the ventral surface, distal phalanx of the right second (index) finger. Electrodermal activity was measured by a multiplex GSR amplifier (LaFayette, 76405) which monitored DC basal galvanic skin resistance and AC galvanic skin resistance simultaneously. Bipolar GSR finger electrodes (LaFayette, 76602) were attached without paste to the volar surface, medial phalanx of the second and third fingers of the left hand. Polygraph recording was done at a chart speed of 2.5 mm/sec. Interpretation of the voice stress profiles was accomplished following the technique set down by the Dektor Corporation.[14] Polygraph interpretation was accomplished in accordance with the rules set down in the Backster Zone Comparison Technique.[15] It should be noted that it is impossible to ascertain the relative weight given polygraph versus VSA; therefore, determinations of truthfulness or deception reflect a combined evaluation culled from both instruments. These aspects of lie detection are further discussed in basic texts by Abrams,[16] Barland and Raskin,[17] and Reid and Inbau.[18]

Results

Table I outlines the results of the series of detection of deception examinations. The sample consisted of 31% females and 69% males. Forty-six per cent of the patients were charged with first degree murder, 23% with second degree murder, 23% with manslaughter and 8% with attempted murder. The question of veracity or direct involvement constituted the major reason for referral, 61%. Confirmation of degree of involvement and delineation of issue or intent made up 31% of the reasons for referral, leaving only 8% as an aid to abreaction. Determinations of truthfulness were arrived at in 46% of the cases. Similarly, 46% of the sample was found to be deceptive. Only 8% resulted in an indefinite determination.

Patients' reactions to the determinations varied widely. In cases A and B, wherein both females were charged with manslaughter, their reaction to being called deceptive was a mix of anger and indignation. Although patient

A claimed amnesia for the event, when she was confronted with her deception, her memory of the offense events began almost immediately to return. The situation was similar with patient H, a male charged with second degree murder. When confronted with his deception, he very suddenly changed his account of what had taken place, although not to the staff's total satisfaction.

TABLE I
BREAKDOWN OF DETECTION OF DECEPTION EXAMINATIONS

Patient	Sex	Age	Charge	Reason for Referral	Determination
A	Female	18	Manslaughter	Amnesia for the event	Deceptive
B	Female	21	Manslaughter	Veracity (direct involvement)	Deceptive
C	Male	21	1st Degree Murder	Veracity (direct involvement) Delineation of issue (intent)	Deceptive
D	Female	22	Attempted Murder	Amnesia for the event Delineation of issue (intent)	Truthful
E	Male	24	1st Degree Murder	Delineation of issue (intent)	Truthful
F	Male	24	1st Degree Murder	Confirmation of degree of involvement	Truthful
G	Female	24	1st Degree Murder	Veracity (direct involvement) Aid to abreaction	Deceptive
H	Male	25	2nd Degree Murder	Veracity (direct involvement) Confirmation of degree of involvement	Deceptive
I	Male	27	2nd Degree Murder	Veracity (direct involvement)	Indefinite
J	Male	31	2nd Degree Murder	Veracity (direct involvement) Confirmation of degree of involvement	Deceptive
K	Male	32	1st Degree Murder	Veracity (direct involvement)	Truthful
L	Male	36	Manslaughter	Amnesia for the event Delineation of issue (intent)	Truthful
M	Male	37	1st Degree Murder	Veracity (direct involvement) Confirmation of degree of involvement	Truthful

In some of the cases of deception the patients adamantly refused to change their stories and in fact refused to discuss the matter with the author any further. In the cases assessed as truthful, quite obviously the patients were pleased that the "lie detector" had verified their stories, and some even felt vindicated by the instrument.

In the case of patient G, a female charged with first degree murder, the emotionally charged experience of being confronted with her own deceptive attempt resulted in her first positive display of genuine remorse over the death of her child. This reaction to the examination was viewed as a major step toward mental health. In essence, regardless of patients' reaction to the determination, it was felt that information otherwise unavailable was added to the total assessment.

One of the positive side effects of the examinations was the change in behavior of the patients following testing. Those patients who had been feigning amnesia or attempting outright deceit now realized that the staff was viewing them in a different light, and subsequently their behavior took on a more representative style. Similarly, patients who were determined truthful showed a freer and more open behavior pattern, suggesting that the test had documented their truthfulness.

Discussion

The results of this study suggest that determinations of truthfulness or deception, resulting from questions of veracity or direct involvement, delineation of issue or intent, confirmation of degree of involvement and amnesia for the event, are useful aids in determining an individual's ultimate responsibility for an offense, and in the overall psychiatric assessment. Furthermore, it is suggested that the emotionally charged environment of a lie detection examination may be a beneficial catharsis for some withdrawn and emotionally flat individuals. Perhaps the most beneficial outcome of this research has been the realization that lie detection can tap areas of individual character and memory in ways unavailable to conventional clinical and psychometric means. For example, it is essential in a forensic assessment to understand the patient's present functional level in light of his past behavior and environment. Often, as this study suggests, the patient's account of what took place during the offense, how it took place, where and when, is not as he says. In addition, his memory of these purported events is often shrouded in some form of alcohol or drug-induced amnesia.

In the cases where the issue was purely one of whether or not the patient was directly involved, if not solely involved, the results were very helpful. As stated earlier, 86% of the deceptive determinations were with cases of veracity. Knowing that the patients had been deceptive about their account of the incident gave a new direction to their assessment and treatment. Similarly, breaking down their amnesia into that which was genuinely not remembered and that which was feigned, aided in our evaluation of their personalities. In terms of responsibility for the offense, outlining the facts of the incident made it possible to assess their role and personality more realistically. In addition, clarifying their role in the incident made the question of intent that much easier to answer. For example, a spontaneous passionate outburst resulting from some life stressor and shrouded in an alcoholic fog can hardly be defined as premeditated crime. Similarly, hiding one's genuine intent and commission of bodily harm behind a pseudo-amnesia attack must be assessed in the light of the deception attempted. The detection of deception, although a powerful technique, is still potentially in error in any determination. As outlined in the results, the cases here presented were only partially verified as to the accuracy of the determination. Not all of the patients confessed their deception, whether positive or negative, and we were unable to verify by outside sources and follow-up the accuracies of the decisions. Furthermore, in a psychiatric setting, it might prove counter-productive to attempt decision verification in light of possible therapeutic repercussions.

There are some limitations to the present study which should be noted. The sample size, although sufficiently large for present research purposes, would have strengthened the results had it been larger. Additionally, all the charges were grouped under the broad rubric of homicide when the particular aspects of the cases may have warranted more precise classification. Here a larger sample would have afforded more statistical potential by virtue of the fact that various subcategories of homicide could have been grouped together with a sufficient number in each cell.

The present study attempted to show the application of the detection of deception to a forensic psychiatric service. Furthermore, it attempted to show how lie detection can serve a useful and needed role in the psychiatric evaluation of a patient. Although the study looked at patients who were charged with homicide, it is not inconceivable, as some of the literature suggests, that lie detection could also be implemented in more general psychiatric settings. It was the hope of this research that the detection of deception might be viewed as a worthwhile and functional adjunct to psychiatric evaluation techniques.

References

1. Lykken D: The lie detector industry: Just nine years more to 1984. Modern Medicine, 59-63, October, 1975
2. Abrams S: The polygraph in a psychiatric setting. American Journal of Psychiatry, 130:94-97, January, 1973
3. Lynch BE, Henry DR: Detection of deception: A comparison of equipment and question techniques. Unpublished manuscript, 1977
4. Horvath F: Detection of deception: A review of field and laboratory procedures and research. Polygraph, 5:107-145, 1976
5. Rice B: The new truth machines. Psychology Today, 61-78, June, 1978
6. Lynch BE, Henry DR: A validity study of the psychological stress evaluator. Canadian Journal of Behavioural Science, 11(1):89-94, 1979
7. Markwart A, Lynch BE: The effect of polygraph evidence on mock jury decision-making. Journal of Police Science and Administration, 7(3): 324—332, 1979
8. Podlesny JA, Raskin DC: Physiological measures and the detection of deception. Psychological Bulletin, 84(4):782-799, 1977
9. Abrams S: The validity of the polygraph with schizophrenics. Polygraph, 3(3):328-337, 1974.
10. Abrams S, Weinstein E: The validity of the polygraph with retardates. Journal of Police Science and Administration, 3(3):310-311, 1975
11. Borgen LA, Goodman LI: Voice analysis of anxiolytic drug effects: Preliminary results. Paper presented at the American Society of Clinical Pharmacology and Therapeutics, March 18, 1976
12. Reeves TE: The Measurement and Treatment of Stress Through Electronic Analysis of Subaudible Voice Stress Patterns and Rational-Emotive Therapy. Unpublished doctoral dissertation, Walden University, 1976
13. Wiggins SL, McCranie ML, Bailey P: Assessment of voice stress in children. The Journal of Nervous and Mental Disease, 160(6):402-408, 1975
14. Dektor Counterintelligence and Security Incorporated, 5508 Port Royal Road, Springfield, Virginia, U.S.A.
15. Backster C: Standardized Polygraph Notepack and Technique Guide: Backster Zone Comparison Technique. 1963. Revised Edition, 1969
16. Abrams S: Polygraph Handbook for Attorneys, Lexington, Mass.: Lexington Books, 1977
17. Barland GH, Raskin DC: Detection of Deception in Electrodermal Activity in Psychological Research, W.F. Prokasy and D.C. Raskin (Eds.). New York, N.Y.: Academic Press, 1973
18. Reid JE, Inbau FE: Truth and Deception, The Polygraph ("Lie-Detector") Technique, 2nd Edition, Baltimore, MD. The Williams and Wilkins Company, 1977