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## POLYGRAPHIC VARIATIONS IN REACTIVITY BETWEEN DELUSIONAL, NON-DELUSIONAL, AND CONTROL GROUPS IN A "CRIME" SITUATION

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Lie detection experts engaged in the training of criminal investigators report the use of simulated or hypothetical crime situations for training purposes in which subjects "act out" the various roles associated with a crime, "the criminal," "the possessor of guilty knowledge," and so on. Limitations of this procedure are that role playing often does not parallel physiological functioning.

Studies have been conducted on the measurable differences between normal and patient groups on various physiological measures such as heart rate, respiration, GSR, and blood pressure. Emotionally disturbed populations, in general, show higher reactivity and greater sympathetic dominance (Wenger<sup>3</sup>, Gunderson<sup>1</sup>, and Malmö<sup>2</sup>) under varying resting and stress conditions.

No accounts were found indicating how persons reflecting varying degrees of emotional disturbance react when in an actual crime situation. Subjective reports from polygraph operators suggest results of examinations of disturbed persons are apt to be equivocal.

The purposes of this study were: to determine the differential reactions of normals, non-delusional (psychoneurotic), and delusional (psychotic) persons when accused in a crime situation; to determine whether emotionally disturbed persons

<sup>1</sup>Gunderson, E. K. Autonomic balance in schizophrenia. Unpublished doctoral dissertation, Univ. of Calif., Los Angeles, 1953.

<sup>2</sup>Malmö, R. B. Anxiety and behavioral arousal. *PSYCHOL. REV.*, 1957, 64, 276-287.

<sup>3</sup>Wenger, M. A. Studies of autonomic balance in Army Air Force Personnel. *COMP. PSYCHOL. MONOGR.*, 1948, No. 101.

frequently demonstrate greater sympathetic dominance under varying resting and stress situations than normals; to test the assumption that mental aberrations of sufficient seriousness to materially affect a polygraph test may be evidenced in the recordings produced.

The study was structured in such a manner as to eliminate the artificiality of role playing and to produce the physiological stress reactions of being accused of an actual crime.

### METHOD

*Subjects.* Non-delusional, delusional, and control groups were used in the experiment with five subjects in each group. The control group consisted of "normal" males from a local educational institution. Non-delusional and delusional groups were composed of males psychiatrically diagnosed and currently under psychiatric care. None were receiving drugs at the time of this study. The subjects had had no previous experience with the polygraph.

*Apparatus.* The apparatus consisted of a portable Stoelting polygraph with accompanying instruments for measuring respiration, heart rate, and galvanic skin response. A skilled polygraph operator conducted all tests with this instrument.<sup>4</sup>

*Procedure.* Subjects were brought to the experimental area in groups of five under the guise of taking psychological tests, and at this time a

<sup>4</sup>The authors wish to express their gratitude to Lie Detection Experts, R. L. Berry and T. T. Puckett, for their contributions and guidance in conducting this study.

No.	Type	Example
1.	Irrelevant	Are you wearing black shoes? (Known Fact)
2.	Irrelevant	Do you have brown hair? (Known Fact)
3.	Relevant	Do you know who took the money? (DYK)
4.	Irrelevant	Are you wearing a black belt? (Known Fact)
5.	Relevant	Did you take the money? (DY)
6.	General Control	Besides what you have told me about, did you ever steal anything else?
7.	Irrelevant	Do you have brown eyes? (Known Fact)
8.	Guilt Complex	Did you take the portable radio that is missing in the (dormitory, hospital, from this office)?
9.	Irrelevant	Are you wearing a (dress, sport) shirt? (Known Fact)
10.	Relevant	Do you know where the money is now? (Misc Relevant)
11.	Specific Control	Besides what you have told me about, did you ever steal anything from the (dormitory, hospital)?

Figure 1. General Question Test

member of the research team administered several short psychological tests. During the last fifteen minutes of the testing session E began removing and examining the contents of his wallet. Roughly five minutes before the end of the testing session another member of the team came into the room and informed E that he was wanted in the main office. At this time E made a show of leaving his wallet on the table and left the room, thereby affording the opportunity for any Ss to go up to the tester's table and examine the contents of the wallet. After a lapse of several minutes, E re-

turned and waited for Ss to complete their tasks, then collected the testing materials and dismissed Ss. When Ss were a few steps out of the door E rushed out and shouted for them to stop and return to the room. When Ss were seated again they were informed that someone had taken a \$20 bill from E's wallet and they must return it. At this time all Ss denied any knowledge of the crime. They were informed that the security officer, a lie detector specialist, had his office in the building and he would be brought in to prove their guilt or innocence.

The polygraph operator was brought in and introduced to the group and informed as to what had happened during the testing session. The subjects were given the opportunity to submit to the test or reject the test and following unanimous assent they were individually subjected to the polygraph. The procedure for the examination was standardized and uniform for each subject. The steps were as follows:

1. Pretest interview: Biographical data, explanation of test and instrument, review of case details, formulation of the general question test structure, i.e., relevant-irrelevant and control questions. The pretest procedure was conducted in a non-accusatory, sympathetic manner to induce minimal stress.

2. General question test: First administration of general question test, one chart only.

3. Card stimulation test: A test wherein the subject is asked to choose a card from a deck of playing cards and is instructed to answer "no" to each card the examiner calls, including the chosen card. The card test is designed to stimulate the subject, increasing anxiety in the guilty while reducing apprehension in the innocent by a positive demonstration that the polygraph will disclose deception.

4. General question test: Second administration of the general question test.

5. Posttest interview and dismissal: Each Ss informed that test indicated that he was truthful.

After each group of subjects had completed the polygraph test, they were assembled and informed as to the nature and purpose of the test, and any questions raised about the experiment were answered.

#### RESULTS AND DISCUSSION

For analyzing the results of the study, four experts in lie detection who had no knowledge of the study independently rated each chart and judged it to be "No Deception Indicated," "Inconclusive," or "Deception Indicated." Judges were informed only that the charts were those of Ss suspected of stealing twenty dollars. Table 1 gives a breakdown of these values for each of the three groups in the experiment.

All four judges agreed on the five control Ss. In both the non-delusional and delusional groups there was no individual on which all four judges agreed. In each of these groups, three judges agreed on four individuals, and two judges agreed

TABLE 1  
RATINGS FOR CONTROL, NON-DELUSIONAL, AND  
DELUSIONAL GROUPS

Ss	Control				Non-Delusional				Delusional			
	Score				Score				Score			
1	3	3	3	3	3	3	3	1	2	1	1	1
2	3	3	3	3	3	2	3	1	2	3	2	2
3	3	3	3	3	3	3	3	2	2	1	3	2
4	3	3	3	3	3	2	3	3	3	3	3	3
5	3	3	3	3	2	3	3	3	2	3	3	3

3 = NDI (No Deception Indicated)

2 = I (Inconclusive)

1 = DI (Deception Indicated)

on one individual. Over-all reliability of ratings was quite high, but it decreased as emotional disturbance increased though there were no specific indications of psychiatric or emotional disturbances reflected on the charts themselves.

Difficulties involved in this study grew out of the lengthy time required to test each subject, from one and one-half to over two hours, and the preventing of "spreading the word" to others and thus removing the stress of being accused of an "actual" crime. This limited the number of Ss that could be placed in each group.

The reliability of judgments on the control subjects was perfect but reduced in the "psychiatric" groups. Such variability is consistent with most measurements of the behavior of psychiatric patients.

Though not included in the study the subjective observation of the psychiatric groups' behavior in the polygraph situation was of particular interest. It was not always easy to objectively determine during a standard pretest interview and evaluation the degree and extent of the patients' emotional disturbance from their demeanor and verbal comments alone. Though variable and subject to more gross movements and professed discomfort with testing apparatus and procedure, much of their behavior was similar to that seen in persons attempting to conceal guilt. Evidence for sympathetic dominance is found in the fact that the "Deception Indicated" and "Inconclusive" classifications, based on physiological measures taken on sympathetic areas, were found to a high degree

in the non-delusional and delusional though not in the normal group.

Lie detection experts demand extreme accuracy in pointing the finger of guilt at an individual. The results of this study would tend to rule out testing for the presence or absence of guilt in an emotionally disturbed individual. This suggests the need for the utmost caution and alertness during the pretest and evaluative phase of the polygraph examination for any symptoms of emotional disturbance. This further suggests the need for psychological screening prior to a polygraphic evaluation where there is the slightest evidence of an emotional disturbance. Ideally, a routine psychological screening would be helpful prior to applying this technique. Psychologists can be useful in devising a screening technique which the trained lie detection expert can administer and interpret.

#### SUMMARY

This study was undertaken to determine the effects of differing states of emotional adjustment

on the ability of lie detection experts to judge subjects' innocence in a crime situation; to determine whether psychiatric patients demonstrated greater sympathetic dominance under resting and stress conditions and whether emotionally disturbed individuals demonstrated any significant polygraphic variations which would inform the operator of their condition. The results suggest that polygraphic testing of persons who show psychoneurotic or psychotic disturbances produce results which might in some cases lead to erroneous conclusions regarding guilt or innocence. Such individuals even though rated as delusional did not uniformly present polygraphic or behavioral symptoms which could have readily been classed as indicative of severe emotional disturbances.

It was suggested that psychological screening be performed where there is any suspicion of emotional disturbance. It would be preferable if the lie detection expert could be trained to administer and interpret such screening tests.