

Report No. DoDPI00-R-0002

Test of a Mock Theft Scenario for
Use in the Psychophysiological
Detection of Deception: IV

DoDPI Research Division Staff

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Department of Defense Polygraph Institute
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13. ABSTRACT (Maximum 200 words) The study described in this report is a continuation of research to develop a participant manipulation to serve as a standard procedure for laboratory psychophysiological detection of deception (PDD) research. The manipulations used in this study were similar to one reported by Kircher (1983) of the University of Utah. In Experiments 1 and 2 two groups of 16 participants who were assigned to be either guilty or innocent of the mock theft of a ring were tested using the Zone Comparison Test, a PDD examination taught at the Department of Defense Polygraph Institute. Written and audio taped instructions were provided to all participants. All participants were promised \$50 for participating in the study and an additional \$25 if they were classified as nondeceptive following a PDD examination. Three human examiners evaluated each of the 32 sets of polygraph charts. For Experiment 1, the decisions made by examiners were correct 55% of the time, incorrect 23% of the time, and no opinion 22% of the time. Experiment 2 was identical to Experiment 1 except that participants completed two screening questionnaires prior to testing. Participants who did not complete the questionnaires satisfactorily were excluded from the study. For Experiment 2, the decisions made by examiners were correct 66% of the time, incorrect 10% of the time, and no opinion 24% of the time. It is concluded that the procedures used to manipulate participants in Experiments 1 and 2 did not meet the necessary requirements for a standard procedure, but that the screening procedure used in Experiment 2 did result in higher accuracy.				
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Director's Foreward

The conduct of empirical studies investigating deception in humans is confounded by the necessity to involve participants in behaviors that will simulate real world activity in such a way as to elicit physiological responding that will allow discrimination between innocent and deceptive participants. Participant manipulation must also meet the ethical standards of the American Psychological Association and is approved by an Institutional Review Board and Human Use Committee. Thus, mock or simulated crime scenarios are complex and require proven effectiveness in eliciting the desired response. Incentives for participation can include a variety of rewards and consequences. Such variables must be investigated for level of effectiveness. The objective of the present study was to investigate the effectiveness of a specific mock crime scenario that incorporated a monetary incentive. Although the mock crime scenario evaluated in this study did not provide the desired level of accuracy in the criterion the results suggest continued efforts in the search for more robust methods of participant manipulation. Moreover, attention should focus on the identification of those components that contribute to the differential responding necessary for improved methodology.



William F. Norris
Director

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Abstract

Research Division Staff, Test of a mock theft scenario for use in the psychophysiological detection of deception: IV. March 2000, Report No. DoDPI00-R-0002. Department of Defense Polygraph Institute, Fort Jackson, SC 36205. -- The study described in this report is a continuation of research to develop a participant manipulation to serve as a standard procedure for laboratory psychophysiological detection of deception (PDD) research. The manipulations used in this study were similar to one reported by Kircher (1983) of the University of Utah. In Experiments 1 and 2 two groups of 16 participants who were assigned to be either guilty or innocent of the mock theft of a ring were tested using the Zone Comparison Test, a PDD examination taught at the Department of Defense Polygraph Institute. Written and audio taped instructions were provided to all participants. All participants were promised \$50 for participating in the study and an additional \$25 if they were classified as nondeceptive following a PDD examination. Three human examiners evaluated each of the 32 sets of polygraph charts. For Experiment 1, the decisions made by examiners were correct 55% of the time, incorrect 23% of the time, and no opinion 22% of the time. Experiment 2 was identical to Experiment 1 except that participants completed two screening questionnaires prior to testing. Participants who did not complete the questionnaires satisfactorily were excluded from the study. For Experiment 2, the decisions made by examiners were correct 66% of the time, incorrect 10% of the time, and no opinion 24% of the time. It is concluded that the procedures used to manipulate participants in Experiments 1 and 2 did not meet the necessary requirements for a standard procedure, but that the screening procedure used in Experiment 2 did result in higher accuracy.

Key Words: mock crime scenarios, psychophysiological detection of deception, Zone Comparison Test

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One research goal of the Department of Defense Polygraph Institute (DoDPI) is to determine the accuracy (i.e., validity) of psychophysiological detection of deception (PDD) procedures. For instance, is it more effective to use the directed lie or the probable lie as a comparison question? To answer such questions, investigators must manipulate one or more variables and determine which manipulations produce the most effective examination. In order to maintain scientific integrity within such a cumulative research program, the methodology of all studies should be as uniform as possible, varying only those procedures under investigation. One of the first steps toward obtaining such uniformity is to develop a participant manipulation procedure that produces reliable results.

One participant manipulation, the "mock" or simulated crime scenario, has been extensively investigated (for a review see Kircher, Horowitz, & Raskin, 1988). Despite criticism that mock crime scenarios and other laboratory research lack external validity (Furedy & Heslegrave, 1991; Lykken, 1981; Iacono, 1991; Office of Technology Assessment [OTA], 1983), mock crime scenarios are generally associated with statistically significant detection of deception, and they provide good experimental control over the experience of participants (Kircher et al., 1988). Not all mock crime scenarios are equally effective, however. In a review of 14 analogue studies, Kircher et al. found that mock crime scenarios involving an incentive for passing the polygraph examination were associated with higher detection of deception. They found a high correlation between incentives and accuracy, $r = .73$. Perhaps, responding in deceptive individuals during polygraph examinations is only elicited when there is a substantial risk associated with the detection of deception (Lykken, 1981; OTA, 1983). Although the potential loss of an incentive for passing the polygraph examination is a substantial risk, it is less substantial than the risk to one's freedom and reputation experienced in actual criminal investigations. The objective of the present study was to test the effectiveness of a specific mock theft scenario that incorporated a monetary incentive.

Experiment 1

The scenario used here is fundamentally the same as the scenario reported by Kircher (1983). This scenario was reported to be highly effective, with 87% of the participants correctly identified as guilty or innocent, and only 7% of the participants left unidentified (that is, inconclusive). We expected to find similar results in the present study. More formally, if the population accuracy rate for this scenario is 87% (which is the best estimate at the present time), then power analyses indicate

that we should expect to obtain at least an 80% accuracy rate in roughly 90% of studies when using 32 participants per study (Glass & Hopkins, 1996, Eq. 13.9). Accordingly, the DoDPI set a goal of 80% accuracy for the present study, which employed 32 participants. If the present mock theft scenario meets the 80% goal, it will be considered as a possible standard scenario for use in the cumulative research program described above.

Method

Participants

Participants were 32 native English speaking civilians (12 males and 20 females), ranging in age from 19 to 44 years. Participants were recruited by a temporary employment service, and were instructed by the employment service to report to the DoDPI at a previously specified time. No attempt was made to select participants with specific demographics (i.e., gender, race, age, etc.) because previous research has shown little effect of demographics on PDD outcome (e.g., Reed, 1993). All participants reported themselves to be healthy, free from drugs and medication, and experimentally naive. No participant reported ever having taken a polygraph exam. Participants were paid \$50 for participating in testing and promised and paid an additional \$25 bonus for a nondeceptive PDD examination outcome. Half of the participants were assigned to the deceptive group and half were assigned to the nondeceptive group. Assignment to groups was predetermined using time of arrival as the only criterion. The procedures used in this project were reviewed and approved by the DoDPI Human Use Committee.

Examiners

Two experienced field examiners who were certified by the Department of Defense conducted the examinations. Three additional Department of Defense certified PDD examiners, who were unaware of the participants' group assignments and veracity, independently scored the examinations. The examination schedule allowed two hours to test each participant, with each examiner testing four participants per day on Tuesday, Wednesday, and Thursday, and two participants on Monday afternoon and Friday.

Apparatus

Equipment used in testing included: two portable cassette recorders which were used to play instructions during the participant manipulation; a simulated diamond ring which was "stolen" by deceptive participants; and two video cameras, televisions, and digital audiovisual mixers which were used to record PDD examinations. Computerized polygraph systems (Axciton Systems, Inc., Houston, TX, Version 7.0) were used to record, and subsequently print, electrodermal, respiratory, and

cardiovascular activity. Participants were seated in an adjustable-arm chair (Lafayette, Lafayette, IN, Model 76871) during the polygraph examination.

Procedure

Each participant was instructed by the temporary employment agency to proceed to a specific room in Ft. McClellan building 3165, and to read the instructions found in an envelope taped to the door of the room. The instructions (Appendix A) directed the participant to enter the room, read and sign a volunteer agreement affidavit (Appendix B), and to listen to a tape recording of further instructions (Appendix C).

The tape recorded instructions for deceptive participants directed them to participate in the following scenario. They were to proceed to a specific office and ask the secretary where Mr. Mitchell could be found, knowing there was no Mr. Mitchell in the building. They were told to leave the secretary's office when told that no one named Mitchell worked in the building. They were instructed to wait out of the secretary's sight, until the secretary left the office. The secretary waited approximately three minutes before leaving the office. The participant was further directed to enter the secretary's office and take a "diamond" ring from an envelope in a metal cash box in the secretary's desk. The participant was instructed to destroy the envelope and to conceal the ring on their person. The tape recorded instructions also directed deceptive participants to accomplish their task and return to the room with the tape recorder within 15 minutes, prepare an excuse in case they were caught, and be careful not to leave fingerprints in the secretary's office.

Nondeceptive participants were informed, via tape recorded instructions, that a ring was being stolen by some other participants, but that they were innocent of the theft. They were directed to proceed to the clearly marked building lobby where they were to wait for 15 minutes before returning to the room with the tape recorder.

The tape recorded instructions informed all of the participants that they would be given a lie detector test by an expert polygraph examiner who did not know if they were guilty of the theft. They were also cautioned that they would be disqualified from receiving any payment if they revealed details of their activities. Finally, participants were told that they would receive a bonus only if the PDD examiner found them to be nondeceptive.

Examiners always met participants in the room where the participants heard their instructions. The examiner introduced himself to the participant as the person who would administer the polygraph, then escorted the participant to the examination room. The examiner reminded the participant that the \$25 bonus was contingent on a truthful outcome on the test. The examiner then seated the participant in a Lafayette polygraph chair and began the pretest (DoDPI, 1994) by asking the participant four pretest interview questions (Appendix D). If participants confessed or incriminated themselves by revealing knowledge that only a guilty participant would know, their participation in the study was terminated. The examiner then obtained biographical information from the participant (Appendix E). Next, the examiner reviewed the test questions (Appendix F). If, during this review, the participant answered any of the comparison questions with a "yes", the question was reworded to elicit an answer of "no."

Sensors were attached to the participant in the following locations: electrodermal finger plates on the distal-medial phalanges of the first and third fingers of the (typically) nondominant hand, blood pressure cuff on the (typically) dominant arm above the brachial artery, and pneumographic chest assemblies across the pectoralis major but under the arm ("thoracic" sensor) and across the rectus abdominis immediately above the navel ("abdominal" sensor). Placement of the sensors was governed by visual cues only, and was therefore only approximate.

After placement of the sensors, an acquaintance test (DoDPI, 1999) was conducted. The acquaintance test consisted of requiring the participant to choose a number between 3 and 6 and then informing the examiner of the chosen number. The participant was then told to deny selecting any number during testing. The participant was then tested on the numbers 2-7. The results of the acquaintance test were presented to the participant as a demonstration of the validity of the lie detection technique.

A Zone Comparison Test (ZCT) immediately followed the acquaintance test. The ZCT is composed of 10 questions, with each question presented approximately 25 seconds after the onset of the previous question (DoDPI, 1992). After each test, the examiner asked the participant how he or she felt about the questions and whether there was any problem with any of them, focusing specifically on the probable lie comparison questions. This procedure, according to Raskin, Barland, and Podlesny (1977), maintains or increases the salience of the comparison questions. After the fifth test, the sensors were removed. A research assistant escorted the participant from the examination room to a nearby small office. The participant was then debriefed (Appendix G) and told the examination result.

Data Reduction

The polygraph charts were independently evaluated by three examiners using the 7-position scoring method taught at the DoDPI (DoDPI, 1992). The examiners were blind to participant group membership and veracity.

Results

Decision frequencies are provided in Table 1. The average percentage of correct, incorrect, and NO decisions was 55%, 23%, and 22%, respectively. Excluding NO decisions, the average percentage of correct decisions was 71%. Collapsing across participant veracity, Cochran's Q tests (Siegal & Castellan, 1988) indicated that there were no significant differences among evaluators in the proportion of correct, incorrect, and NO decisions.

Table 1
Frequency of Decisions for 16 Deceptive and 16 Nondeceptive Participants

Evaluator	Deceptive			Nondeceptive			Total
	Correct	Error	NO	Correct	Error	NO	
1	10	3	3	8	4	4	32
2	11	1	4	4	6	6	32
3	13	1	2	7	7	2	32

Note. NO = no opinion.

Table 2 shows the pairwise proportion of agreement between each evaluator, in addition to the proportion of correct decisions for each evaluator. As Table 2 shows, the proportion of agreement within evaluators ranged from .69 to .75. The proportion of correct decisions ranged from .47 to .63.

Table 2
Pairwise Proportion of Agreement Between Evaluators

Evaluator	2	3	Accuracy
1	.69	.72	.56
2		.75	.47
3			.63

Discussion

The mock crime procedure used in this study did not meet the DoDPI goal of 80% correct (against 50% chance). The procedure also produced slightly greater than 20% inconclusive (or NO) decisions. Since the study was not designed to measure the effect of a monetary incentive, no assessment of this factor was made.

A possible source of the low accuracy achieved in Experiment 1 may have been a lack of comprehension on the part of participants either with respect to the mock crime scenario or in terms of the instructions provided by the polygraph examiners. Experiment 2 was conducted with a screening process in order to correct for this possibility.

Experiment 2

Experiment 2 served to replicate Experiment 1 procedurally, but with an added component. Experiment 2 sought to remedy the low accuracy achieved in Experiment 1 by requiring that participants complete two screening questionnaires prior to completing either the innocent or guilty scenario. These instruments were included for two reasons. First, they were included to ensure that participants were mentally competent. Second, they served to ensure that participants had a clear understanding of the features of the study in which they were participating. Only those participants who performed to criterion on these instruments were allowed to further participate in the study.

Method

Participants

Sixty participants were screened prior to the experiment. Twenty-one participants did not pass the screening instruments (described below). Of the remaining 39 participants, two were eliminated due to problems during polygraph testing, and five were not included because participant capacity (N=32) had been reached. The 32 participants who succeeded in passing the screening instruments and in completing the study were native English speaking civilians (17 males and 15 females), ranging in age from 19 to 44 years. With the exception of the screening process, participants were selected and compensated in the same way as those in Experiment 1.

Examiners

Two experienced field examiners who were certified by the Department of Defense conducted the examinations. Three additional Department of Defense certified PDD examiners, who were unaware of the participants' group assignments and veracity,

independently scored the examinations. The examination schedule allowed two hours to test each participant, with each examiner testing four participants per day on Tuesday, Wednesday, and Thursday, and two participants on Monday afternoon and Friday.

Apparatus

The polygraph instrumentation was identical to that used in Experiment 1. Two screening questionnaires were added in Experiment 2. The first instrument was the Mini-Mental State Examination (Folstein, Folstein, & McHugh, 1975), which is included in Appendix H. This instrument includes a set of simple factual questions, a probed memory recall task, some simple motoric instructions, and some simple reading and writing instructions. The Mini Mental State Examination is very brief, containing only a total of 22 items.

The second instrument was a brief reading comprehension task, which is included in Appendix I. The instrument included a written statement (1.5 pages, single-spaced) describing the features and purpose of a hypothetical study, in addition to a participant's role in the study. Included with the written statement were 14 multiple choice items to ensure that participants could read and understand the passage of text. The hypothetical study described was similar, though not identical to the actual study. This passage was included to insure that participants could understand the procedures of a study very similar to the one actually being used, without disclosing the details of the actual study.

Both the Mini-Mental State Examination and the reading comprehension task were selected, based on the expertise of the research staff, in order to screen out participants who would not, or could not, follow oral and written instructions. Of the twenty-one participants who did not pass the screening instruments, eighteen failed only the reading comprehension task, and three failed both the reading comprehension task and the Mini-Mental State Examination.

Procedure

The procedure was identical to that used in Experiment 1, excepting the inclusion of the two screening instruments. Prior to being scheduled in the study, participants met a confederate at the employment agency where they completed the Mini-Mental State Examination and the reading comprehension test. Participants were informed that they were to complete the two questionnaires so that their memory and ability to concentrate could be assessed. In addition, participants were told that it was necessary for them to demonstrate that they could follow both written and oral instructions.

The Mini-Mental State Examination was administered orally, and participants responded orally. This was done to make sure that participants could follow oral instructions. Next, participants were required to complete the reading comprehension task in written format. Each instrument took approximately 15 minutes to complete, for a total of 30 minutes to complete both instruments. With the exception of two questions on the reading comprehension task having to do with subjective opinions, participants were to answer all items on both instruments correctly. Failure to do so resulted in disqualification from the study. Participants who met the criteria were then scheduled for the study.

Data Reduction

The polygraph charts were independently evaluated by three examiners using the 7-position scoring method taught at the DoDPI (DoDPI, 1992). The examiners were again blind to participants group membership and veracity.

Results

The frequencies of evaluation decisions for Experiment 2 are provided in Table 3. The average percentage of correct, incorrect, and NO decisions produced by human scorers was 66%, 10%, and 24%, respectively. Excluding NO decisions, the average percentage of correct decisions was 86%. Collapsing across participant veracity, Cochran's Q tests indicated that there were no significant differences among evaluators in the proportion of correct, incorrect, and NO decisions.

Table 3
Frequency of Decisions for 16 Deceptive and 16 Nondeceptive Participants

Evaluator	Deceptive			Nondeceptive			Total
	Correct	Error	NO	Correct	Error	NO	
1	14	1	1	7	2	7	32
2	11	0	5	9	2	5	32
3	13	1	2	9	4	3	32

Note. NO = no opinion.

Table 4 shows the pairwise proportion of agreement between each evaluator, in addition to the proportion of correct decisions for each evaluator. As Table 4 shows, the proportion

of agreement was comparable to that found in Experiment 1, ranging from .63 to .78.

Table 4

Pairwise Proportion of Agreement Between Evaluators

Evaluator	2	3	Accuracy
1	.63	.69	.66
2		.78	.63
3			.69

Discussion

Compared to Experiment 1, Experiment 2 produced a non-significant ($z = .834$, $p > .05$), but notable increase in accuracy (55% to 66%). The boost in accuracy resulted from an increase in the number of correct calls with a corresponding decrease in the number of errors. However, the proportion of NO decisions remained constant across the two experiments. The average proportion of agreement was also larger for Experiment 2 relative to Experiment 1.

General Discussion

The results indicate that Experiments 1 and 2 did not meet the 80% accuracy criterion or the 20% or fewer NO decision proportion. Experiment 2 did show a substantial (though non-significant) increase in veracity decision accuracy relative to Experiment 1. This increase in accuracy could be attributable to the screening of participants using the two instruments described above. However, this conclusion is tentative in that Experiments 1 and 2 used different examiners, different human evaluators, and were conducted at different times (Experiment 2 was conducted following the completion of Experiment 1).

Kircher (1983) reported results with a single unaware evaluator of 87% correct, 6% incorrect, and 7% inconclusives with 100 participants using five tests when necessary. Overall, this discrepancy in evaluator accuracy suggests that the participant manipulation used in the mock crime scenario of the present study may have been carried out in a different fashion from that of Kircher or that the participant sub-populations may have been different in the two studies. There are other noted procedural differences that may also account for some of the differences between Kircher's results and those of the present study. One major difference was that Kircher solicited participants using a classified advertisement in a local newspaper. Kircher's participants had no direct contact with experimenters until they

met the examiner. In contrast, the participants in this study were obtained via an employment agency. Other differences include the number of charts used, rules to discern participant veracity with assigned scores, and the number of data channels used (Senter, Dollins, & Krapohl, 2000). Procedural differences may also exist with respect to the way in which the pretest interviews were conducted, and the way in which comparison questions were emphasized to participants. Future research should investigate these possibilities in order to determine the source of differences and to discover the optimal set of procedures for conducting polygraph examinations.

The accuracy in the current study may also be an example of the accuracy variability observed in other analog PDD studies. Honts and Quick (1995) reported accuracy rates ranging from a high of 88% to a low of 53% for four laboratory studies conducted since 1986. Given the degree of accuracy variability seen in many analog studies, accuracy could be a function of more than the scenario that participants enact. Other important factors contributing to accuracy may include participant characteristics, instrumentation, and examiner variables.

In conclusion, when considering the high accuracy achieved with this paradigm in previous studies, it is recommended that research using this standard procedure continue, perhaps in conjunction with a screening mechanism such as that used in Experiment 2. However, attention should be paid to the identification of factors that mediate deception detection accuracy, including those beyond the scenario script. The research should identify and include those components that will likely contribute to the degree of differential responding necessary for a good standard methodology. Finally, the methodology must be repeatable and transportable.

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Appendix A

Preliminary Instructions

** DoDPI97-P-0004 **

Enter this room and close the door behind you. You will find a form on the desk which you must read before starting the experiment. If you wish to participate in the experiment, you must fill out the form and sign it. Leave the form on the desk. After you have signed the form, turn on the tape recorder (press the button labeled play) to hear your instructions. Destroy this paper before reading the form and listening to your instructions.

Appendix B

Volunteer Agreement Affidavit

** DODPI97-P-0004 **

Participant #: _____
Name: _____
SSN: _____ / _____ / _____ Date of Birth
(Mo/Da/Yr): _____ / _____ / _____
Place of Birth: _____
Home
Address: _____
City: _____ State: _____ Home Phone Number: _____

This form is affected by the Privacy Act of 1974.

AUTHORITY: 10 USC 3013, 44 USE 3101 and 10 USC 1071-1087, and E.O. 9397.

PRINCIPAL PURPOSE: To document voluntary participation in a Department of Defense Polygraph Institute Research Program.

ROUTINE USES: The SSN and home address will be used for identification and locating purposes only. Information derived from the study will be used to document the study, adjudication of claims, and for mandatory record keeping associated with human use in government research. Information may be furnished to Federal agencies.

VOLUNTARY DISCLOSURE: Failure to furnish requested information will preclude your voluntary participation in this investigational study.

PERSONAL STATEMENT

I understand that I am participating in a research study in lie detection for which I will be paid \$50. Half of the people who participate will take a valuable ring from a location in this building according to taped instructions. The other half of the participants do not take the ring and follow another set of taped instructions. If I decide to participate in the experiment I will be given one of those sets of instructions. I will then be given a lie detector test on which I am to deny having any knowledge of the theft or that I participated in it. If the polygraph test shows me to be innocent, I will be paid a \$25 bonus plus the \$50 that I will be paid for participating. That will bring the total to \$75.

I understand that there are no known dangers or risks associated with my participation in this study except for mild

apprehension or anxiety experienced by some people during the taking of the ring and during the lie detection test. These feelings will go away as soon as the test is over. I understand that my participation may be recorded on video tape and that the recording will be maintained as required by law. My participation in this experiment is strictly voluntary. I may decide now that I do not wish to participate. Even if I decide to participate now, I may withdraw at anytime. If I do not wish to participate all I need do is tell the receptionist that I do not wish to participate.

If I participate in the experiment, I will be paid \$50. If I complete the experiment, I will be eligible for a \$25 bonus. If I withdraw before completing the experiment, I will not be eligible for the bonus. I wish to participate in the experiment according to the conditions above, and I will sign below:

Date: _____ Signature: _____

Leave this form on the table. Now push down on the "green square" or the play button to hear your instructions.

Appendix C

Tape Recorded Instructions

** DoDPI97-P-0004**

Deceptive Participants

Please listen to these instructions carefully and make sure that you understand exactly what you are to do. Replay this tape if necessary. You may make a few notes to help you remember what to do as you carry out these instructions. There are writing materials next to this recorder. However, any notes you make must be destroyed before you leave this room. This is a lie detection experiment. You will steal a valuable ring. You will then be given a lie detector test. If you can beat the lie detector by appearing innocent on that test, you will receive a substantial bonus in addition to the \$50 which you will be paid for participating in the experiment. Here is what you are to do.

Go to room __ in this building. You will find a secretary there. Ask the secretary where Mr. Mitchell's office is. She will tell you that there is no Mr. Mitchell in this building. Thank her and leave immediately. After you leave, keep watch on **room __** until the secretary goes out. Don't act suspiciously and don't let her see you. When she is gone go into her room. In one of her desk drawers is a gray metal cash box. Find that cash box as quickly as possible. Inside the cash box is an envelope containing the ring. Take the ring out of the envelope and conceal it on your person. You can hide it in your wallet or in any of your pockets, but do not hide it in your shoe or sock.

If you are found innocent on the lie detector test, you will be paid a bonus which will bring your total pay to \$75. You must return the ring when the lie detector test is over. Be careful not to leave any fingerprints, and be sure to dispose of the envelope where it will not be found. Since anyone may walk into **room __** while you are there, be sure to have an alibi ready in case someone does catch you. You are not, and I repeat not, to tell anyone that you are participating in an experiment. If the secretary returns and your alibi does not satisfy her, you will be disqualified from taking the lie detector test and will not be paid anything.

Before you leave this room, check the time. You have 15 minutes to complete your theft once you leave. Do not return early. If you finish early, wait somewhere away from the secretary's office until the full 15 minutes are up, then **return to the room you are now in**, and wait until an examiner comes for you.

You will be given a lie detector test by a lie detector expert. He will not know if you are innocent or guilty because half of the participants in the experiment are innocent and have not committed the theft. This means that he will have to make his decision entirely on the basis of the lie detector test. You will receive the bonus only if the examiner finds you innocent. So you must actually convince the examiner that you are innocent. If he decides when the test is over that you are guilty or he can't decide whether you are guilty or innocent, you will not receive the bonus.

Also, you must not make him suspicious when he is interviewing you during the initial portion of the test. The innocent participants in this experiment simply spend 15 minutes in the waiting area. They do not know any details of the theft such as room number or what desk drawer the ring is in. They know that the guilty participants have gone to a room, taken a ring from an envelope in a cash box after searching a desk, and have concealed it on their person. They don't know anything else. You could easily give yourself away by revealing any other details. So, when the lie detector expert asks you questions about any other details about the theft, you must not only deny knowing anything, but you must do so sincerely so that he doesn't become suspicious. If at some point you believe you blew it don't give up you may still be able to beat the test, but if you confess you will not even be eligible to receive the \$50 which is paid for participating in the experiment.

Those are your instructions. You must follow those instructions exactly if you are to be eligible for the \$50 pay and for the bonus, which will make the pay total \$75. If you do not wish to participate in this experiment, please inform the receptionist. If you are not entirely sure of what you are to do, push the stop lever on the recorder and rewind the tape by pressing the review lever. Then push the play lever to hear the instructions again. When you are done, push the stop lever. Destroy any notes you made before leaving this room. Once you leave this room, you should return in exactly 15 minutes, not sooner, and not later. That is all. Please press the stop lever on the tape recorder.

Nondeceptive Participants

Please listen to these instructions carefully and make sure that you understand exactly what you are to do. Replay this tape if necessary. You may make a few notes to help you remember what to do as you carry out these instructions. There are writing

materials next to this recorder. However, any notes that you make must be destroyed before you leave this room.

This is a lie detection experiment. Half of the people in this experiment are instructed to commit a theft. They are told to go to a room and search a desk until they find a cash box.. From that cash box they are to take an envelope containing a valuable ring. They are instructed to take the ring out of the envelope and conceal it on their person. Then they report back for a lie detector test. If they are found innocent on the test, they are paid a bonus in addition to the \$50 which they are paid for participating in the experiment.

You are not one of those people. You are not to steal anything. You are an innocent suspect, but you will also receive a bonus which will bring your total pay to \$75 if you are found innocent on the lie detector test. Therefore, it is in your best interest to be truthful during the test and deny having anything to do with the theft of the ring. Before you leave this room, check the time. You are to leave this room for exactly 15 minutes and then return for the lie detector test. **Go to the waiting area in the front lobby of this building.** Do not wait around here; do not return early; wait until exactly 15 minutes have passed and then return to **room __**, the room you are now in, and wait until an examiner comes for you. You will be given a lie detector test by a lie detector expert. He will not know if you are innocent or guilty. This means that he will have to make his decision entirely on the basis of the lie detector test. You will receive the bonus only if the examiner finds you innocent. So you must actually convince the examiner that you are innocent. If he decides when the test is over that you are guilty or if he can't decide whether you are guilty or innocent, you will not be eligible for bonus.

Those are your instructions. You must follow those instructions exactly if you are to be eligible for the \$50 pay and for the bonus, which will make your pay total \$75. If you do not wish to participate in this experiment, please inform the receptionist. If you are not entirely sure of what you are to do, push the stop lever on the recorder and rewind the tape by pressing the review lever. Then push the play lever to hear the instructions again. When you are done, push the stop lever. Destroy any notes you made before leaving this room. Once you leave this room, you should return in exactly 15 minutes, not sooner, and not later. That is all. Please press the stop lever on the tape recorder.

Appendix D

Pretest Interview Questions

** DoDPI97-P-0004 **

1. You are going to be tested about the theft of a valuable ring. What I want you to understand is that if you didn't take the ring, the polygraph test will show that. Did you take the ring?
2. Is there any reason why your fingerprints should be on the secretary's desk in room _____?
3. How do you think the polygraph test will come out on you today?
4. How do you feel about taking the polygraph test?

Appendix E

Biographical Questionnaire

** DoDPI97-P-0004 **

Participant number: _____

Date of completion: _____

Please carefully complete all of the blanks below:

Name (Please Print): _____

Gender: ()M ()F

Age: _____

Occupation: _____

Married _____ Children _____

Education _____

Previous PDD Examination: ()Yes ()No

Hours of sleep last night: _____

Have you ingested alcohol, nicotine, or caffeine (including coffee, tea, soft-drinks, and chocolate) within the last 24 hours? ()Yes ()No

If you have ingested any of the above, what and when?

How would you describe your present health and physical well being?

()Excellent ()Good ()Fair ()Poor

Are you presently under a physician's care ? ()Yes ()No

If so, for what condition? _____

Are you taking any medication? ()Yes ()No

Please identify the type, dosage, and last time any medication was taken:

Are you experiencing any pain or physical discomfort today?

()None ()Mild ()Moderate ()Severe

Reason for any pain or discomfort today.

Please note reason(s), if examinee is unsuitable for testing:

Appendix F

Test Questions

** DoDPI97-P-0004 **

Presentation order:

1. Is today _____?
2. Regarding whether or not you took that missing ring, do you intend to answer truthfully each question about that?
3. Are you completely convinced that I will only ask you questions that we have reviewed?
- *4. Prior to 1996, did you ever take anything?
5. Did you take that missing ring?
- † *6. Before your _____ birthday did you ever take anything of value?
7. Did you take the ring reported missing?
8. Is there something else you are afraid I will ask you a question about?
- *9. Between the ages of 16 and _____, did you ever take anything of value?
10. Do you know where that missing ring is now?

Review Order:

1. Sacrifice relevant, question 2.
2. Relevant questions, questions 5, 7, and 10.
3. Control questions, questions 4, 6, and 9.
4. Irrelevant question, question 1.
5. Symptomatic questions, questions 8 and 3 in this order.

* All control questions may be modified if the participant initially answers yes to the question during the pretest. The modification may consist of inserting at the beginning of the question the phrase "Based on what you told me... ."

† Round to the nearest 5 years.

Appendix G

Participant Debriefing Statement

** DoDPI97-P-0004 **

Now that you have completed your examination, the entire project staff sincerely thanks you for your help. Your work here may be more important than you realize.

If you participated in attempting to deceive the PDD examiner, you are assured by the project staff that you in no way violated any rule or law. The deception was required for investigational purposes only. If you actually took the ring, please return it to the escort accompanying you away from the examination room. Regardless of the role you played, it is our hope that you were made to feel as comfortable as possible throughout the study. If you do have concerns or questions regarding your participation, please make them known to the principal investigator, Eben M. Ingram, Ph.D., Research Psychologist, (205)848-3803, Department of Defense Polygraph Institute.

Finally, it is VERY IMPORTANT that you DO NOT discuss the details of this study with anyone else. One of your friends, or a friend of a friend, may decide to participate in this or a similar study someday. If they know the details of the investigation process, they could be disqualified from participating in a study and/or unconsciously influence the results of the study using their knowledge.

Please sign this form in the space provided to indicate that you understand the instructions provided above.

Participant Signature

Printed Name

Date

Participant

Appendix H

Mini-Mental State Examination ** DoDPI97-P-0004A **

NAME _____

DATE: _____

Now I would like to ask you some questions to check your memory and concentration. Some of them may be easy and some of them may be hard.		<u>Error</u>	<u>Correct</u>	<u>Not Assessed</u>
1. What is the year? _____		0	1	9
2. What is the season of the year? _____		0	1	9
3. What is the date? _____		0	1	9
4. What is the day of the week? _____		0	1	9
5. What is the month? _____		0	1	9
6. Can you tell me where we are? _____ (For instance , what state are we in?)		0	1	9
7. What county are we in? _____		0	1	9
8. What city/town are we in? _____		0	1	9
9. What floor of the building are we on? _____		0	1	9
10. What is the name or address of this place? _____		0	1	9
11. I am going to name three objects. After I have said them, I want you to repeat them. Remember what they are because I am going to ask you to name them again in a few minutes. Please repeat the names for me:				
[Score first try. Repeat objects for three trials only.]	Apples	0	1	9

Table	0	1	9
	<u>Error</u>	<u>Correct</u>	<u>Not Assessed</u>
Penny	0	1	9

12. Now I am going to give you a word and ask you to spell it forwards and backwards. The word is WORLD. First spell it backwards.

[Repeat if necessary, and help subject spell word forwards if necessary.]

[Score number of letters given in correct order. See scoring criteria.]
[0 to 5; 9= not assessed]

What were the three objects
I asked you to remember?

- | | | | | |
|-----|---|---|---|---|
| 13. | Apples _____ | 0 | 1 | 9 |
| 14. | Table _____ | 0 | 1 | 9 |
| 15. | Penny _____ | 0 | 1 | 9 |
| 16. | [Show wrist <u>watch</u>
What is this called? _____] | 0 | 1 | 9 |
| 17. | [Show <u>pencil</u>
What is this called? _____] | 0 | 1 | 9 |
| 18. | I would like you to repeat a phase after me:
[The phase is] <u>'NO IF'S, AND'S OR BUT'S'</u>
[Allow only one trial] | 0 | 1 | 9 |
| 19. | Read the words on this page, then do what it says.
[The paper reads <u>"CLOSE YOUR EYES"</u>
[Code correct if subject closes eyes.] | 0 | 1 | 9 |
| 20. | I'm going to give you a piece of paper. When I do,
take the paper in your right hand, fold the paper
in half with both hands, and put the paper down on | | | |

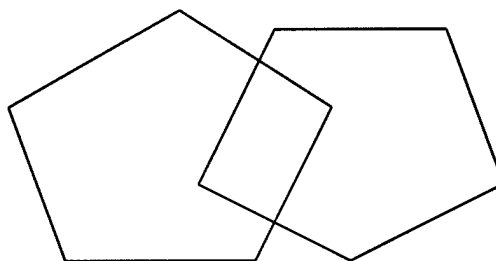
you lap. [Read full statement, THEN hand over paper.

	<u>Error</u>	<u>Correct</u>	<u>Not Assessed</u>
Do not repeat instructions or coach.]			
Right hand	0	1	9
Folds	0	1	9
In lap	0	1	9
21. Write any complete sentence on that piece of paper for me.	0	1	9
22. Here is a drawing. Please copy the drawing on the same paper.			
[Score correct if the two five-sided figures intersect to form a four-sided figure and if all angles in the five-sided figure are preserved.	0	1	9

TOTAL SCORE

[The sum of the scores for all 22 questions, excluding any scores of '9']

CLOSE YOUR EYES



Appendix I

A Test on Instructions

** DoDPI97-P-0004A **

This is a research study designed to study the polygraph or lie detector. Basically, what a polygraph involves is a test of whether or not a person is being truthful when they deny having done something. A polygraph examiner gives the test, and at the end of the test he or she examines recordings made by a polygraph instrument. The examiner then interprets those recordings to determine whether or not the person is lying.

Everyone who takes part in this study will be paid by the agency that recruited you for your participation. They will pay you _____. Let's call this money participation money. At the start of this study everybody in the study will receive a \$100 bonus which they will carry with them. This \$100 is to get everybody interested in doing the study. A group of people chosen by chance will then be given an opportunity of taking either some money or a valuable item, for example let us say \$200 or a valuable ring or a coin, from a desk drawer in a room. If the people who decide to take the money from the drawer can pass a polygraph exam about the theft of \$200, they will be allowed to keep the money that they took as well as the \$100 and the participation money. The total amount of money they get to keep is \$300. If they cannot pass the exam, they will have to give up all of the money, the \$200 taken and the \$100, and only get to keep the participation money paid by the agency.

To pass the polygraph, a person must appear innocent on the polygraph test. In other words, the test must show the person to be innocent of taking anything, thus convincing the polygraph examiner that the person is innocent regardless of whether or not the person is innocent or guilty. Now, those subjects who do not take the \$200 or any other item from the desk drawer are innocent. This means that they are not guilty of the simulated crime in question, since they did not take anything. They must, however, be found innocent in order to keep the initial \$100 bonus, otherwise they will lose it, and only get to keep the participation money.

The purpose of this study is to find out if the polygraph examiner can find the person who took the money. Once more, to be considered as having passed the polygraph exam, the polygraph examiner must reach the conclusion after the test that you did not do the act in question, regardless of whether you did it or not. In the case of this study, the examiner must conclude that you did not take anything, money or items, and it doesn't matter whether you took anything or not. If you took something, you still have to make the examiner think that you did not take anything. This is true even if you did not take anything. You, therefore, do not want to assist the examiner by doing something to incriminate yourself or by confessing to having taken something that you did not. What we mean is that when you do something -anything- that lets the examiner know that you took money or anything else, you have "incriminated yourself." The examiner can now point to you as one of those who are guilty. It does not matter whether or not you took the money, you have failed the polygraph. This would happen if you accidentally said something that puts you at the place where the event in question happened. There are many other

ways that you can incriminate yourself. For instance, if it looks as if you do not take the interview seriously, and if you act as if it all is one big joke. If you say something that makes you appear to have done something different from everyone else. Finally, you would incriminate yourself if you outright confessed or admitted to having taken something whether you did or not. This could happen if you were trying very hard to convince the examiner that you are being honest with him or her and forget what your job is in this study. Your job is what you are expected to do, and be paid for.

Your job in this study would be to convince the polygraph examiner and his or her instrument that you did not do the thing in question. Your job is to do this whether or not you did the thing in question. If you failed to do your job, you would only receive the participation money. It is as simple as that. This, therefore, is not so simple a task that it can be done in your sleep. The examiner is trying to take the bonus money that would go into your pocket and put it in his or her pocket. In other words he or she is paid to determine who has taken the money, and will apply all of the skill at his or her command to do this. If you want to get to keep any bonus money, you will have to use all of the skills that you have at your command to beat the examiner by convincing him or her that you did not have anything to do with the event in question.

Since we don't want to waste your time or ours, we are going to give you a little test that will give you an idea of how well you understand what this is all about with regard to guilt and innocence. If you fail to answer all of the questions correctly then you are not understanding something, and would not have much chance of coming out of the exam with anything. In that case it would not help us or you to have you participate further.

Questions Based on the Above Explanation

The following questions are based on the above explanation which describes a possible scenario. Please read the explanation and answer the questions as if the above scenario applied to you. That is answer the questions as if you participated in an experiment like that described above.

1. If John Doe went into a room and took something, for example, \$200 or a valuable ring from a desk drawer, for the purposes of this research study and the polygraph exam that he will be taking, he is:

_____ guilty
_____ innocent

2. Do you think you could pass a polygraph exam about taking some money if you were guilty of taking the money?

_____ Yes
_____ No

3. If you didn't take any money or anything else from the room, for the purposes of this research study and the polygraph exam that you will be taking, you are:

_____ guilty
_____ innocent

4. Let's say John Doe participated in the study that you just finished reading about. Let's say John decided to take the \$200. How much money would John get to keep if he passed the polygraph exam?

- _____ a. Any money he received for participating in the study, but nothing more.
- _____ b. \$100 + any participation money.
- _____ c. \$200 + any participation money.
- _____ d. \$300 + any participation money.
- _____ e. No money at all.

5. Let's say John Doe participated in the study that you just finished reading about. Let's say John decided to take the \$200. How much money would John get to keep if he failed the polygraph exam?

- _____ a. Any money he received for participating in the study, but nothing more.
- _____ b. \$100 + any participation money.
- _____ c. \$200 + any participation money.
- _____ d. \$300 + any participation money.
- _____ e. No money at all.

6. The \$100 that John Doe will be given at the start of this study makes him:
_____ a. guilty in this study.
_____ b. innocent in this study.
_____ c. neither, The \$100 is just for passing the polygraph.
7. If you took the money that the polygraph examiner is asking you about during your examination, and you did or said something that lets him know that you took the money, you have:
_____ a. followed your instructions.
_____ b. incriminated yourself (the money now goes from your pocket back into the assistant's pocket).
_____ c. beat the polygraph.
_____ c. won all of the money.
8. If you took the money, and you said something that lets the examiner know that you took the money, how much money do you think you will take home?
_____ a. Any money that you received for participating in the study, but nothing more.
_____ b. \$100 + any participation money.
_____ c. \$200 + any participation money.
_____ d. \$300 + any participation money.
_____ e. No money at all.
9. If you took the \$200 found to be missing, and you admit to the examiner while he or she is interviewing you that you took the \$200, then you have:
_____ a. confessed.
_____ b. beat the polygraph exam.
_____ c. followed your instructions to the letter.
_____ d. made sure that you will get to take home all of the money promised to you.
10. To pass the polygraph exam means...
_____ a. That when the polygraph examiner evaluates the charts he or she decides that you have been telling the truth about whether or not you did what you were being tested for.
_____ b. You refused to take the polygraph.
_____ c. You told the polygraph examiner that you took money whether you did or not.
_____ d. That when the polygraph examiner evaluates the charts he or she decides that you did what you were being tested for even though you did not.
11. Now let's say John Doe decided to not take the \$200. How much money would John get to keep if he passed the polygraph exam?
_____ a. Any money he received for participating in the study, but nothing more.
_____ b. \$100 + any participation money.
_____ c. \$200 + any participation money.
_____ d. \$300 + any participation money.

_____ e. No money at all.

12. If John Doe participated in the study that you just finished reading about, how much money would John get to keep if he failed the polygraph exam?

_____ a. Any money he received for participating in the study, but nothing more.

_____ b. \$100 + any participation money.

_____ c. \$200 + any participation money.

_____ d. \$300 + any participation money.

_____ e. No money at all.

13. If you participated in the study that you just finished reading about, and you did not take the money that the polygraph examiner is asking you about. In order to get to keep the \$100, you have to:

_____ a. convince the polygraph examiner that you are telling the truth.

_____ b. be able to lie convincingly

_____ c. fool the polygraph examiner

14. If you refuse to take a polygraph examination, you get to keep:

_____ a. the \$100

_____ b. the money that the contractor is going to pay you for coming here.

_____ c. The amount the contract is to pay you plus the \$100.

Questionnaire Admission Criteria

Each QUESTION, except question 2, must be answered correctly in order to be admitted to the study as a participant. The correct answers are listed below. All questions on the Mini-Mental State Examination must be answered correctly.

1. Guilty
2. Do not score this question, it is for information only.
3. Innocent
4. d.
5. a.
6. b. or c. (Accept either answer as correct)
7. b.
8. a.
9. a.
10. a.
11. b.
12. a.
13. a.
14. b.

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 c. TITLE Research Division
 d. OFFICE DoD Polygraph Institute
 e. AGENCY DoD Polygraph Institute

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Final Report for public release

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a. NAME (Last, First, Middle Initial) KEENE, DAVE
 b. TELEPHONE NO. (Include Area Code) (703) 697-9467

5. PRIOR COORDINATION

a. NAME (Last, First, Middle Initial) RYAN, ANDREW H., JR., PH.D.
 Chief Research Division
 b. OFFICE / AGENCY DoD Polygraph Institute
 c. TELEPHONE NO. (Include Area Code) (803) 751-5867

6. REMARKS

I have reviewed this document and find no classified information. I see no reason why this document cannot be released to the public.

David Keene

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