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PSYCHOLOGICAL POSSIBILITIES IN THE DECEPTION TESTS

WILLIAM M. MARSTON¹

INTRODUCTORY STATEMENT

The legal problems involved in the introduction of psychological tests into court or probation office procedure are very complicated and interesting; but before we can consider the legal possibilities of the use of psychological tests we must discover whether or not the psychological development in any particular field justifies the introduction of tests in question. This article is concerned with an examination of the state of the psychological authorities in the field of deception tests and the presentation of results of practical application of some tests during the war.

There are four types of psycho-physiological deception tests known. First, there is the galvanometer test. The spring galvanometer measures the electrical body currents, which have been found to vary greatly with the varying emotions of the subject. This test is of very little value in detecting deception, because the instrument registers nearly every emotion experienced during the testimony of the subject, and so renders it nearly impossible to distinguish those emotions caused by deception.

Secondly, we have the association reaction-time test. This consists in presenting to the subject lists of "crucial" and "non-crucial" words, the crucial words combined in groups of three to five or scattered singly through the non-crucial words at the choice of the operator. The crucial words are those which would have, to the guilty defendant, a meaning connected with the principal crime; but would carry no embarrassing significance to an innocent defendant. The subject is instructed to reply to each stimulus word with the first association which comes into his mind and to perform this reaction as quickly as possible. If the defendant is guilty his emotions concerning the crucial words usually delay his reaction times (although the writer during experiments in the Harvard Psychological Laboratory has obtained results which seem to indicate a "negative" type liar whose reactions on crucial words seem to be hastened).¹ This associa-

¹Member of the Boston Bar.

¹See "Reaction Time Symptoms of Deception," *Journal of Experimental Psychology*, February, 1920.

tion reaction time test is of some practical value, but is limited in any practical situation by the difficulty of finding stimulus words which are truly crucial, inasmuch as the defendant or witness has doubtless read all the details of evidence in the papers or has been thoroughly informed with regard to same by his attorney, so that very possibly a perfectly innocent defendant or witness would show the same psychological reaction to the crucial words as would the guilty person.

Thirdly, we have Benussi's breathing test for deception. This test consists in the measurement of the length of the suspects's inspirations and expirations before and after making a statement. A different ratio between inspiration and expiration is found when the subject is lying. This test was used by the writer, assisted by Dr. H. E. Burt, in certain criminal courts in 1918 at the request of the Psychological Committee of the National Research Council. Certain results were obtained having psychological interest, but not susceptible of sufficiently definite analysis to prove legally acceptable. The practical limitation upon this test is the difficulty of breaking up the subject's testimony into isolated statements, the truth or falsity of which may be tested. Moreover, it is seriously to be doubted whether the mental content of a witness or defendant with regard to the crime or conduct in issue can actually be analyzed out into real psychological elements. In other words, the subject may be asked "Did you do this?" or "Did you do that?" and the Benussi test may indicate that he is lying. Yet the witness' consciousness of guilt may not relate to the act upon which he is questioned, as the operator understands it, inasmuch as that act may have a large number of secret complications unknown to the operator and irrelevant to the issue in hand which, nevertheless, serve to force the subject into a deceptive reaction. The final criticism of this test seems to be that Benussi's results are as yet uncorroborated by other experiments, and whereas there is no reason to doubt that the deceptive attitude is expressed in modifications of the subject's breathing, it seems probable that the test as reported by Benussi is a little too much of a "patent medicine." In other words, the breathing symptoms are nowhere nearly as clear cut and definite as the casual reader of Benussi's report might suppose.

Fourthly, deception may be tested by means of the measurement of the systolic blood pressure of a suspect while he is testifying. The success of this method was reported by the writer, working under Prof. Munsterberg at the Harvard Laboratory in 1915.² In October, 1917, at the request of the Psychological Committee of National

²See *Journal of Experimental Psychology*, April, 1917.

Research Council, tests of this type were conducted in the Harvard Laboratory, with a view to determining their value in government service during the war, and were reported upon as having given 100% accuracy of judgment under very difficult conditions.³ Finally, over 20 tests were given, as above mentioned, at the request of said Psychological Committee, to actual defendants in certain criminal courts. As far as findings could be verified, all judgments based upon the b. p. records were correct; although equal accuracy did not attend either association or breathing tests which were simultaneously given.

It should be noted, however, that this blood pressure test, as hereinafter described, was never alleged to be a simple cure-all or patent medicine automatically detecting every deception on the part of the subject, but rather, in the belief of the writer, the systolic blood pressure test is to be regarded as a psychologically complicated indicator of deception requiring expert knowledge and skill in its application and interpretation. Psychologically, however, it may be said to have the very important advantage over all other deception tests that the psychophysiological mechanism modifying the blood pressure is almost exclusively influenced by the emotions of fear and anger, which probably largely constitute the deceptive complex.

Inasmuch as the results hereinafter reported deal very largely with the systolic blood pressure test, a brief explanation of its method of application may be of interest. The simplicity of the apparatus and method of this test is its first recommendation for practical usefulness. The sphygmomanometer is attached to the subject's left arm above the elbow, the subject being seated comfortably before a table with his left arm resting on the top within easy reach of the operator, who then proceeds to take the subject's blood pressure from time to time while the witness is being cross-examined either by the blood pressure operator, or, preferably, by a second operator who may be called the examiner. The effectiveness of the test depends almost entirely upon the construction and arrangement of the cross-examination and its proper correlation with the blood pressure readings, a system of signals between examiner and b. p. operator being necessary. Other tests of the nature of which the subject is ignorant, as well as periods of rest and series of questions upon irrelevant and indifferent subjects are also interjected into the examination of the subject in such a way as may, in each particular case, best enable the operator to determine the normal blood pressure of the subject and also the normal blood pressure plus the fixed increase presumably present throughout the whole examina-

³See Report in Psychological Committee files, under date November 13, 1917.

tion due to the excitement caused by the test or by court procedure. The form of the blood pressure curve as correlated with the cross-examination is then carefully studied by the operators, and is found to indicate with surprising accuracy and minuteness the fluctuation of the witness' emotions during the telling of his story. It was found that in the cases of actual defendants it was of great practical advantage to request the person to tell his entire story first in his own way without either prompting or questions from the examiner. Irrelevant matter was next interposed, and the cross-examination could then be built up with great effectiveness upon the elements of the defendant's own voluntary story.

Two practical trials of deception tests are reported below. First, three types of deception tests were tried out upon actual defendants in the criminal courts. These tests were performed, with the consent of each defendant, in connection with the psychiatric and medical examination of various individuals referred for this purpose to the probation office; some before trial, and others at various points in the proceedings, with regard to continuance of probation, dismissal of the case, or recommendation of the probation office to the court. This opportunity for a practical try-out of these tests was made possible by the liberal and patriotic attitude of the court and the energetic efforts of Major Robert M. Yerkes and Dr. Angell of the National Research Council. The resulting records, although not used in court nor taken official cognizance of, yet proved of such considerable value as embodied in the doctor's reports that the probation office was considerably interested in the continuance of the tests; and the doctor, himself a man of large psychological experience and ability, was anxious to co-operate in a future extension of the work. The tests used were the Benussi test, the association reaction time test, and the systolic blood pressure test.

Secondly, the blood pressure tests were tried out at Camp Greenleaf in the Psychological Training School, where the attempt was made to train expert operators and examiners for the installation of these deception tests on a large scale. This work virtually constituted a trial of the practicability of training a corps of experts for the widespread use of the deception tests. Fourteen psychological student officers, all of some legal experience, were chosen and trained, the results reported below serving to point the essential legal character, place, and possibilities of deception tests, and the skill and training necessary for their operation.

II. BLOOD PRESSURE, BREATHING, AND ASSOCIATION TESTS ON CRIMINAL DEFENDANTS

The apparatus for all three of these tests was set up in a screened-off portion of the office of the examining physician, attached as an assistant probation officer to the criminal court. All the apparatus was hidden from the view of the subject, each defendant thrusting his left arm through a slit in a black curtain so that even the sphygmomanometer could not be seen. By order of the chief justice we were able to choose any out of the many cases sent up to the doctor's office for medical and psychological examination and we chose, as far as possible, those cases where the blood pressure judgment as to truth or falsity could be immediately checked up either by a medical examination or by an immediate hearing in the court below. Twenty individual cases where the b. p. judgment as to deception could be thus verified were selected for report. In a few cases the examiner's assistant was not able to be present so that the examiner was obliged, beside conducting the cross-examination, to record the psycho-physiological measurements. That this did not interfere materially with the results indicates the practicability of the application of the tests. In every one of the twenty cases where immediate determination of the accuracy of the b. p. judgments was possible, the judgments were found correct, and in at least five cases discoveries made by the examiner on the basis of his cross-examination, together with the b. p. behavior at these crucial points were of assistance to the doctor and through him to the court and probation office in disposing of the cases. It may be said that the association and breathing test data were so complicated and difficult of treatment that as a practical matter all the examiner's judgments were based upon the blood pressure alone.

The examiner made eight b. p. judgments of complete truth (Nos. 1, 2, 6a, 9, 12, 14, 17 and 18); eight b. p. judgments of consistent lying (Nos. 3, 8, 10, 11, 15, 16, 19 and 20), and in five cases the examiner was able to pick out points upon which defendant lied and other points upon which defendant was telling the truth (Nos. 4, 5, 6b, 7 and 13).

The cases in detail follow:

CASE No. 1. WOMAN (WHITE). AGE, 42 YEARS

Record of Case Given to Examiner Previous to Deception Test.

Several previous arrests for drinking; known to be an old drug user, arrested December 1st because hypodermic outfit was found in room where defendant spent the night. Defendant claims she is not now using drugs.

B. P. Judgment.

Innocent. Woman is not now using drugs.

Verification.

Medical examination showed increased weight, better all-around health, etc., which could not have existed were defendant now using drugs.

CASE NO. 2. WOMAN (COLORED). AGE, 31 YEARS

Record of Case Given to Examiner Previous to Deception Test.

Colored woman, 31 years of age. Arrested six months ago for larceny of a ring and placed on probation on the strength of the testimony of a colored man from whom a ring was alleged to have been stolen. Defendant during the six months had not made restitution, as she had been ordered to do, and was suspected by the probation officer of having avoided her calls. Examination was to determine whether or not she stole the ring in the first place.

B. P. Judgment.

Innocent. Woman telling the truth as to the ring, having been given to her.

Verification.

The judge dismissed the case, although probation officer advised six months further probation. New evidence had turned up indicating that the colored man who first alleged that defendant stole ring was a disreputable character, etc.

CASE NO. 3. WOMAN (WHITE). AGE, 29 YEARS

Record of Case Given to Examiner Previous to Deception Test.

Twenty-nine years of age, white. No court record. Arrested for fornication in a disorderly house in South Boston. Woman denies ever having been to that house before, and claims that this is her first sexual offense. Secretary who examined defendant believed her story absolutely and told examiner there was no material there for him.

B. P. Judgment.

Lying as to never having been to said disorderly house before, and guilty consciousness with regard to past experiences enjoyed with "lady friend," whom she was visiting at time of arrest. Also guilty consciousness with regard to her husband, probably was involved with him in some criminal acts.

Verification.

While discussing B. P. judgment with the doctor ten minutes after examination, another woman from the same disorderly house, arrested for having drugs in her possession there, and already placed on probation, was brought in. She stated that she had seen and heard principal defendant at the house repeatedly previous to the evening of

defendant's arrest. The doctor then looked up husband's record, and found that he had forged fifteen or more times; that there was evidence she knew of his criminal acts; that she knew the police were after him, and that she knew where he was. When the case came up for trial the judge told defendant that he did not believe a word she said and placed defendant on probation. Still later evidence turned up showing that defendant had lived with her husband at said disorderly house for over a month while he was being sought on several more forgery charges, and that, of course, defendant knew said warrant was out for husband.

CASE No. 4. WOMAN (WHITE). AGE, 31 YEARS

Record of Case Given to Examiner Previous to Deception Test.

White woman, 31 years of age. An old drug user cured by hospital treatment three and a half months ago. Now suspected of taking more drugs than she admits.

B. P. Judgment.

Truthful. Defendant's account of the number of drugs she is taking is correct. Lied, however, about not having had sexual relations with other men.

Verification.

Medical examination by the doctor showed defendant had serious glandular trouble in the neck and jaw, causing severe pain, and that defendant was apparently taking small doses of morphine whenever the pain became very severe; as nearly as could be judged she was taking about same amount she had admitted. The doctor's medical judgment, as sent down to the court, was identical with B. P. judgment. Not much evidence on point of promiscuous sexual intercourse, but general circumstantial evidence points to intercourse with at least three men other than her husband.

CASE No. 5. WOMAN (WHITE). AGE, 46 YEARS

Record of Case Given to Examiner Previous to Deception Test.

White woman, 46 years of age. Arrested for sale of liquor. Admits sale of liquor this once, but says that she never did it before. This statement probation officer suspects is untrue. Also says she only drinks whisky and milk three times a day; never drinks any other sort of alcoholic beverage. Probation officer suspects this is untrue.

B. P. Judgment.

Lied as to only drinking milk and whisky three times a day. Probably drinks heavily whenever she can get liquor. As to sale of liquor, has feeling of guilt; probably knew when she sold it that it was against the law. Telling truth as to how she got the liquor and as to never having sold it before.

Verification.

Medical examination by the doctor showed without question that defendant was a confirmed alcoholic who is now drinking heavily and

continuously. Evidence by detective who made the arrest tends to show defendant knew her act in selling the liquor was illegal; also his evidence tends to show that she lied as to amount of money she took for the liquor. As to previous sale of liquor by defendant and as to how defendant got liquor in question, there was absolutely no evidence.

CASE No. 6A. WOMAN (WHITE), AGE, 19 YEARS

Record of Case Given to Examiner Previous to Deception Test.

White woman, 19 years of age. Arrested for larceny of goods to value of \$500 by use of department store coins found in a pocket-book lost by the owner in the South Station. Has been under examination in court and by the probation officer all day long and has now confessed practically the whole affair, including the present location of the stolen goods. Details on which defendant is still suspected of deception are—

1. When she found department store coins.
2. Immorality with other men and as to whether she supported herself by this means.
3. Relations with husband, where she lived with him, etc.

B. P. Judgment.

B. P. examination interrupted at end of free recital which did not touch on any of above mentioned crucial details. Judgment is truthful as to points covered during recital.

Verification.

Recital as given verified by all the evidence now in the record of the case. Case to be send back for further B. P. test on crucial details December 8th.

CASE No. 6B

Record of Case Given to Examiner Previous to Deception Test.

Girl tells probation officer she never took any of her mother's money; that she never took anything previous to principal offense except a coat, dress, and silk night dress, which she took three months ago. Also tells probation officer that she has never had any sexual relations with other men than her husband. Probation officer suspects all above statements to be false.

B. P. Judgment.

Lies as to only having stolen three articles previous to principal offense, and also probably lies as to lack of sexual relations with other men. Also lies clearly about never having stolen money from her mother.

Verification.

Mother calling at office later the same day says girl has frequently taken money from her pocketbook and that she has often caught her doing this, but was lax with her and had done nothing about it. Defendant has no previous criminal record, but probation officer has

evidence from other girls with whom she has been going to the effect that defendant has stolen several articles of clothing and one or two pieces of jewelry previous to principal offense. Also the evidence of these girl companions tends to establish the fact that defendant has had sexual intercourse with men other than her husband. This evidence, though not sufficient to convict of any previous larceny or fornication, was sufficient to induce the judge to find the girl guilty in the principal case and to place her on six months' probation, part of which is to be spent at the House of Good Shepherd in view of above mentioned evidence.

CASE No. 7. WOMAN (WHITE). AGE, 39 YEARS

Record of Case Given to Examiner Previous to Deception Test.

White woman, 39 years of age. Arrested for drunkenness. According to probation officer's suspicions, defendant's husband had been arrested and had served three months for beating her. Defendant claimed that she did not remember this at all and defendant took the attitude that probation officer was trying to "put something over on her." She also maintained that her husband did not drink at all and that she never quarreled nor had any harsh words with him.

B. P. Judgment.

Truth as to knowledge of husband's serving time for beating her, etc., but lies as to the amount she knows her husband drinks—probably drinks pretty steadily. Under the conditions of the B. P. examination, defendant immediately admitted that she had "little chewing matches" with her husband quite often and that on these occasions when he failed to come home promptly from work, she had quarrels when he would grab her by the shoulder and push her about a little.

Verification.

Husband's record was looked up and it was discovered that his arrest for abuse of his wife occurred ten years ago. It also appeared that he did not serve any time, but paid a fine of \$25 to escape a sentence of three months and was released immediately. There is, of course, no absolute verification as to whether or not defendant remembered this incident, but the doctor gave as his informal medical judgment the opinion that defendant's long time memory was so poor that she probably could not remember with any distinctness events that happened more than three or four years ago. On the point of drinking, it was discovered from the records that husband was arrested last Saturday, December 1st, very early in the morning for drinking and disorderly conduct and was released again at 11 o'clock that night at defendant's earnest solicitation.

CASE No. 8. WOMAN (WHITE). AGE, 19 YEARS..

Record of Case Given to Examiner Previous to Deception Test.

White, 19 years of age. Two girls arrested together for shoplifting. Several shirt-waists and camisoles were found in the possession of one of the girls. The other girl says she only took the

waists for her companion and at her instigation; that she had never stolen before and that she had never had intercourse with any men. Also accuses her companion of having stolen the clothes she is at present wearing. Medico-psychological examination shows defendant to be a very low mental type, almost an f. m., and also shows that her affective re-actions are sluggish almost to the point of non-existence.

B. P. Judgment.

Lies as to all elements in her story, but particularly as to relations with men, the guilt of her companion, and on the point of defendant never having known others who stole. B. P. test was cut short in the midst of cross-examination by the entrance of an officer to take defendant to House of Good Shepherd. It will be noted that the B. P. follows the typical form of an "L" curve and it was the judgment of the experimenter that the very small actual amount of the B. P. rises was due to the dulled affective re-actions of the subject.

Verification.

Before being taken into court, defendant was examined physically and it was discovered that she had a well-developed case of syphilis with the other usual indications of continual sexual intercourse. For this reason, together with the extremely low level of her mentality, she was sent away for preliminary medical treatment, and her case was indefinitely continued pending results of further medical and psychological examinations. There was, however, evidence in the hands of the police tending to show that this girl belonged to a shop-lifting gang in which many feeble-minded and subnormal girls had been taught to steal by older women, who took all the loot and threw all the blame on girls like the defendant.

CASE NO. 9. WOMAN (WHITE). AGE, ABOUT 19 YEARS

Record of Case Given to Examiner Previous to Deception Test.

White; arrested with stolen shirtwaists, etc., in her possession as noted under last case. Also a rather low mental type and very suggestible. Defendant confesses having taken the shirtwaists, etc., in co-operation with her companion, but denies ever having taken anything before, and denies instigating the present theft. Defendant takes an equal share of blame in the principal offense, but insists she deserves no more than an equal share.

B. P. Judgment.

B. P. interrupted in the midst of cross-examination by entrance of officer. B. P. judgment based on record as far as test had gone was that defendant was absolutely truthful.

Verification.

Case continued because of absolute lack of any evidence tending to show defendant had ever stolen before. This is, of course, only a negative verification, but no further positive evidence has as yet been turned in by the police.

CASE No. 10. WOMAN (WHITE). AGE, 32 YEARS

Record of Case Given to Examiner Previous to Deception Test.

White, 32 years of age. Arrested for larceny. (Experimenter was not told what defendant was alleged to have stolen or any further details concerning defendant's actions.) Defendant maintains complete innocence of offense charged.

B. P. Judgment.

Has guilty consciousness with regard to the stolen goods and either lies concerning having met his brother at Higgins' saloon at just the time he was supposed to have stolen the goods, or else had some guilty consciousness with regard to some criminal actions in which his brother and probably himself have been involved.

Verification.

Previous record of thirty arrests, mostly for drunkenness, but several for larceny. Case continued until next week, but police claim they have positive evidence that defendant stole the goods in question. Verification on point of brother's possible complicity entirely lacking, but at the suggestion of the doctor the police are investigating further along this line.

CASE No. 11. WOMAN (WHITE). AGE, 46 YEARS

Record of Case Given to Examiner Previous to Deception Test.

White, 46 years old. Defendant arrested for shop-lifting and is strongly suspected of having stolen before. Also is suspected of drinking heavily, although, defendant denies this absolutely. Suggested by one of the defendant's neighbors that whole family were thieves.

B. P. Judgment.

Lied as to drinking and also as to never having stolen before. Also lied in testifying that none of her children had ever stolen anything.

Verification.

Medical examination showed that defendant was a confirmed and heavy drinker. On the point of previous thefts, no criminal record was found against defendant, but the police had strong evidence that defendant had been shop-lifting systematically for some time and on this evidence defendant was found guilty and placed on probation. Later defendant admitted that one of her two boys had been arrested for stealing and on being asked which, said the fifteen-year-old boy. Upon being told that there was a court record against her twelve-year-old boy in the Juvenile Court, she thereupon said that it was the twelve-year-old boy she referred to and that the fifteen-year-old boy was innocent. Evidence of neighbors and police tends to show that both boys have been engaged in petty thefts for several years, the twelve-year-old boy being now on probation in the Juvenile Court under conviction for larceny.

CASE No. 12. WOMAN (COLORED). AGE, 21 YEARS

Record of Case Given to Examiner Previous to Deception Test.

Colored, 21 years of age. Arrested for fornication. Admitted she lived three weeks with a man, but says she never had intercourse with anyone else. Probation officer suspects this statement to be untrue, and also suspects that she takes drink and drugs.

B. P. Judgment.

Under conditions of B. P. examination, defendant admitted that she had lived four weeks with the man she was found with and that she had had intercourse with one other man. B. P. judgment was that defendant's story was wholly truthful.

Verification.

Medical examination showed no traces of alcohol or drugs and the evidence leading the probation officer to suspect defendant had had intercourse with other men turned out to be evidence of intercourse with that man whom defendant confessed in B. P. examination to having had intercourse with.

CASE No. 13. WOMAN (WHITE). AGE, 34 YEARS

Record of Case Given to Examiner Previous to Deception Test.

White, 34 years old. Defendant arrested for sexual offense; has been married twice, first husband died and second divorced. Suspected of earning money by promiscuous sexual intercourse, also suspected of drinking heavily. Defendant denies having given her second husband just grounds for divorce by her relations with other men; she denies drinking during the last month and denies ever having earned any money by sexual intercourse. Also suspected of taking drugs and was arrested in company of two other men and her landlady, one of the men being intoxicated, and it was suspected that defendant had been having intercourse with one of these men.

B. P. Judgment.

Lies as to (1) having given any grounds to husband for divorce, (2) having had anything to drink for one month, and (3) as to never having earned money by sexual intercourse. Tells truth as to (1) taking no drugs, and (2) as to not having had intercourse with the man with whom she was discovered by the probation officer.

Verification.

(1) Record of divorce suit shows husband presented very strong evidence tending to prove that defendant had had sexual intercourse with several other men and the finding of fact was in favor of the husband and divorce granted on grounds of adultery. (2) Medical examination showed that defendant had been drinking very heavily quite recently and later in court defendant admitted having had a little beer recently. (3) Defendant also admitted in court, after very strong evidence had been procured against her, that she had had intercourse six months ago with a certain man and had received \$5 therefor. Medical examination showed no traces of drugs and no

further evidence was found by the probation officer as to whether or not defendant had had intercourse just previous to being discovered.

CASE No. 14. WOMAN (WHITE). AGE, 17 YEARS

Record of Case Given to Examiner Previous to Deception Test.

White, 17 years old. Defendant arrested at request of father as a stubborn child. Had run away from home twice and was reported by someone at the Franklin Square House where defendant worked while away from home, to have been discharged from employment there because of continued deception practiced upon the Franklin Square House authorities. Also defendant is suspected of often going to dances, etc., when she is supposed to be at evening school.

B. P. Judgment.

Under conditions of B. P. test, defendant admitted coming in late several times at the Franklin House and skipping by the watchman and also having committed other infringements of the rules of that institution. She claimed, however, that she had never lied to the authorities there. Defendant also admitted that very frequently she went to the movies or to a dance when she was supposed to be at evening school, and said she did not tell her father because he got very angry. B. P. judgment was that defendant told the truth about everything.

Verification.

Investigation at the Franklin House showed defendant and another girl continually broke the rules there, especially the rule about coming in late at night. A new watchman, apparently, had detected defendant and another girl slipping upstairs late one night and had mistaken them for two innocent girls. The resulting circumstances, accusations and investigation, had been very disagreeable for the two innocent girls, but defendant had voluntarily confessed and had thereupon been asked to leave the house because of her continued disobedience. Probation officer had based her general suspicions of the defendant's veracity very largely on an inaccurate account of the Franklin Square House affair and when this was cleared up, all the evidence in the hands of the probation officer tended to show that defendant had confessed the whole truth.

CASE No. 15. WOMAN (WHITE). AGE, 40 YEARS

Record of Case Given to Examiner Previous to Deception Test.

White, 40 years old. An old drug user; has used morphine, coke and heroin for twenty years, taking at one time as much as a dram in two days. Six months ago defendant underwent a hospital cure and was thought to have been successfully turned against the habit. Defendant's probation was up and she had surrendered herself to the probation officer for disposition of her case. In making this disposition, the judge wished to know whether or not she had used any drugs since her supposed cure six months ago.

B. P. Judgment.

Very marked general weakness in the sympathetic nervous system, undoubtedly produced by drugs during the past. This weakness is judged to account for the continual sharp fluctuations in the B. P. which were apparently caused by slight light, nervous excitement of any kind. In view of this very evident condition and the medical drug history of the case, lack of sustained B. P. at a high level in the form of an "L" curve cause experimenter to make a judgment of truthful with regard to witness' entire testimony as to her abstinence from drugs during the last six months.

Verification.

Medical examination shows no traces whatsoever of recent use of drugs and also shows a general improvement in health, weight, etc., which probably could not have occurred were defendant now using drugs. Defendant's physical condition is still decidedly weak, however. On basis of medical judgment, defendant was dismissed.

CASE No. 16. MAN (WHITE). AGE, 17 YEARS

Record of Case Given to Examiner Previous to Deception Test.

White, 17 years old. Defendant arrested for larceny. (Examiner was given no further details concerning this larceny or any other suspicions concerning defendant's case.)

B. P. Judgment.

Guilty. Defendant also has guilty consciousness with regard to the way of spending his evenings while in New York City.

Verification.

Defendant had no criminal record in either New York or Boston, but on special further inquiry it was found that the New York police had long been watching him as a suspicious character in view of the fact that he entertained many companions of very questionable character in his rooms night after night, and carried on long conferences with these men in an unknown tongue. Both the Boston police and the New York police are convinced from circumstantial evidence that defendant had been pursuing a criminal career for several years. In the light of this evidence, defendant was found guilty and placed on six months' probation.

CASE No. 17. MAN (WHITE). AGE, 46 YEARS

Record of Case Given to Examiner Previous to Deception Test.

White, 46 years of age. Defendant arrested for larceny. (Examiner given no further details.)

B. P. Judgment.

Although defendant tells most improbable story about having found a pair of shoes in the hold of ship whereon he was working, B. P. shows his story to be clearly truthful.

Verification.

Police discovered that several other longshoremen, working on the same ship (which was being loaded with relief supplies for

Halifax), had been systematically stealing the supplies and it was further found that one of these men had taken the shoes in question, but had been obliged to drop them into the hold to avoid detection. Defendant's companions testified that he was badly intoxicated at the time he took the shoes and that he shouted up to the foreman in charge of the crew that he had found a pair of shoes in the elevator pit. Defendant has no criminal record and Officer C., who has known defendant for eight or nine years, testifies to his previous good character and clean record, both at Eastport, Me., and in other ports.

CASE No. 18. WOMAN (WHITE). AGE, 23 YEARS

Record of Case Given to Examiner Previous to Deception Test.

White. Defendant arrested for shop-lifting. Has lived with sister for over a year and has apparently done nothing to support herself. Is suspected of previous shop-lifting and of earning money by promiscuous sexual intercourse.

B. P. Judgment.

Defendant truthful in saying she has never had any sexual intercourse and that she has never stolen anything before.

Verification.

Medical examination showed that defendant had never had sexual intercourse and there was a total lack of evidence on the point of previous thefts, defendant's sister testifying that she had supplied her with clothes and board in exchange for defendant's assistance with the housework during the past year and three months. This evidence exactly corroborated defendant's story and the probation officer and police had no evidence whatsoever in rebuttal.

CASS No. 19. MAN (WHITE). AGE, 22 YEARS

Record of Case Given to Examiner Previous to Deception Test.

White, 22 years of age. Defendant has criminal record of three convictions for larceny. Arrested this time for larceny of a thousand cigars which were found in his possession. Defendant has already been found guilty and placed on probation under a suspended sentence. Defendant, however, still denies that he stole the cigars from the Adams Express Company, and maintains that a friend of his gave them to him to sell.

B. P. Judgment.

Lies both as to present and past innocence. Man who defendant claimed gave him cigars is pure fiction.

Verification.

It will be noted in this case that the B. P. examination came after the defendant had been found guilty by the court on very strong and practically indisputable evidence. There is, therefore, of course, no question of verification. This case was specially requested by the examiner in order to test the effect of a previous disposition of a defendant's case upon his B. P. It will be noted that the B. P. record

assumes an almost perfect form of lying curve, but that the total maximum rise from the probable norm plus excitement was very small in comparison with the other lying B. P. records. If this same B. P. curve had been found before the case came up for trial, however, the examiner believes that his judgment would have been the same, especially if subject was a low mental type.

CONCLUSIONS

(1) The blood pressure deception test has demonstratable practical value in determining the truth or falsity of various elements in a witness' story, as well as of the story in its entirety; and also in determining the general attitude of innocence or guilt in a person accused of criminal acts.

(2) The blood pressure deception test seems to have value as a substitute for the oath now used in court procedure in that confessions seem to occur under the conditions of the psychological test which it had been previously impossible to extract in court or under the examination of the probation officer and police.

(3) By detecting guilty emotions focussed upon hitherto unsuspected points of testimony the deception tests appear to open new and fruitful channels for police investigation.

III. TRAINING TESTS AT CAMP GREENLEAF

(From report submitted to Surgeon General's Office, Office of the Judge Advocate General, and Bureau of Military Intelligence.)

Problem.

The problems contemplated by these tests were two-fold: first, the investigation of the value and the applicability of the systolic blood pressure deception test to military situations arising in connection with courts-martial, where psychological examiners might be called upon to testify as to truth or falsity of testimony, or as to the sincerity of the accused, or in connection with investigations of alleged enemy agents by the Military Intelligence Department, where psychological examiners might be required to test the truth of the story of the person under suspicion; and, secondly, to determine the extent to which these deception tests could be confided to non-expert operatives.

Occasion.

The tests herein reported were given to the enlisted men and non-commissioned officers of Psychological Co. 1, School of Psychology, Camp Greenleaf, Chickamauga Park, Ga., under the direction of the

writer, in 1918, in connection with courses given said Psychological Co. 1 upon Military Problems of Testimony.

Method.

A. *Crime.* About 50 articles, each of some intrinsic value to a soldier, together with ten five-cent pieces, were disposed about a room on the second floor of the Psychology Building. The men were then instructed to enter said room, examine contents, and if they so chose, to steal and conceal upon their person one or more of said articles. If they chose to steal they must hide the stolen articles within the Psychology Building within 5 minutes after taking same; and in 10 minutes thereafter, they must take the stolen article out of the building, convey it to their barracks, and there conceal it among their effects. When examined, they were instructed to do their utmost to convince their examiners of their innocence. If they stole and yet succeeded in deceiving their examiners, they could keep the article stolen; if detected they must return same.

B. *Examiners.* Fourteen men, all of some legal training, were selected by the writer to act as agents for the procuring of evidence against the accused, and to act as examiners when the suspects were summoned to testify. These agents were allowed to question any suspect, and to watch his movements as closely as possible, after he emerged from the room where the articles were planted. Private Clifton Murphy (a member of the New York Bar) was placed in command of these agents, in order that they might be disposed effectively about the Psychology Building and barracks. All evidence was then sorted and distributed to those agents who were to examine the suspect involved thereby, the entire group of suspects having previously been divided and assigned among the agents for examination. The agents working in seven groups, two agents to a group, then prepared general outlines for the cross-examination of each suspect on the basis of the evidence collected against him. A brief preliminary instruction in use of apparatus and interpretation of b. p. curves was then given the agents by the writer, but none of said agents had ever previously given a single deception test. Agents alternated within group as cross-examiner, the other agent recording the b. p.

C. *Apparatus.* Three sphygmomanometers, Tycos type, were used. One instrument was very defective, as reported by the medical officer who used it; and one of the others was somewhat inaccurate.

D. *Results.* Thirty-five men were examined. Nineteen men chose to steal, while 16 men were innocent and told the truth under cross-examination. It will be noted that the choice between guilt and

innocence was left wholly with the subjects, no check upon the proportion being retained by the experimenter. Twenty-six correct judgments, based solely upon the b. p. curves interpreted in light of the conditions of examination, were made by the agents and 9 incorrect judgments were recorded. This gave a total percentage correct agents' judgments of 74.3.

The writer, upon inspection of the curves turned over to him by the agents, made 34 correct and 1 incorrect judgment, giving a percentage correct judgments of 97.1. It is to be noted, however, that one of the records judged correctly by the writer was such that, on a second inspection (after the sealed confessions had been opened), it seemed to him mere chance which had determined the correctness of his judgment, since the curve was not one upon which a judgment of "Guilty" could normally be based. The more accurate percentage of the writer's correct judgments would, then, be 94.2.

Eighteen judgments, based upon the evidence alone, were recorded by the examiners, although they were not required to record such judgments. Seventeen of these disagreed with the corresponding b. p. judgments; and of these, 15 evidence judgments were wrong, b. p. judgments being correct in each case. In one case evidence judgment was as to isolated inaccuracies of testimony, so that no comparison with b. p. judgment can be made. In one case evidence judgment was correct and b. p. judgment wrong. It may fairly be assumed that where no evidence judgment was recorded, said judgment coincided with the b. p. judgment.

It will be noted from the following detailed tabulation of results, that each group of agents examined 5 suspects, thus furnishing a fair basis for comparison between the groups with regard to expertness in interpreting the b. p. curves; and groups are arranged in the following table in order of their skill:

Operatives and Experimenters	No. of Men Examined	No. Cor- rect B. P. Judgments	No. G. Judged I.	No. I. Judged G.	Per Cent of Correct Judgment
1. Murphy }	5	5	0	0	100
Puhak }					
Lt. Marston		5	0	0	100
2. Bundlie }	5	4	0	1	80
Myhre }					
Lt. Marston		4	0	0	100
3. Rushmore }	5	4	1	0	80
Coleman }					
Lt. Marston		5	0	0	100

4. Broehl	}	5	4	1	0	60
Allenberg						
Lt. Marston	.....	..	5	0	0	100
5. Wilson	}	5	4	0	1	80
Watkins						
Lt. Marston	.....	..	4	0	0	100
6. Lewis	}	5	3	1	1	60
Hanemann						
Lt. Marston	.....	..	4	0	1	80
7. Schaeffer	}	5	2	2	1	40
Strauss						
Lt. Marston	.....	..	4	0	0	100
Total—		—	—	—	—	—
Operatives ...	35		26	5	4	74.3
Lt. Marston..	..		34	0	1	97.1

One correct judgment based on record insufficient, on later inspection, to substantiate judgment. It might, therefore, properly be recorded as an error, bringing total percentage Lt. Marston's correct judgments down to 94.2.

It is, therefore, a most significant feature of our results that one group of examiners stand out pre-eminently without a single error, while out of 9 mistakes, 3 were made by a single group. To test this point more fully, a second series of tests were given by the expert group, Murphy and Puhak. Ten subjects were selected from among the agents, instructed to do anything they wished for ten minutes, and were then examined by Murphy and Puhak to determine the truth or falsity of their accounts of their action during the said 10 minutes. The examiners recorded 10 correct judgments, thus substantiating the thesis that their former perfect record was due to expertness in interpreting the b. p. curve.

Conclusions.

(1) The total average percentage correct judgments attained by 14 examiners without any previous experience whatever in these tests, and especially the very high degree of accuracy of their b. p. judgments as compared to their spontaneous evidence judgments, would seem sufficiently high to indicate that this b. p. deception test has considerable practical value, even when applied by non-experts; but above results would not seem to justify the conclusion that courts-martial or military intelligence officers should rely solely upon the results obtained from these tests when operated by non-experts.

(2) The percentage of correct judgments, however, obtained by Privates Murphy and Puhak, and by Lieutenant Marston, would seem clearly indicative of the practically absolute reliability of this deception test when administered by examiners who, by virtue of previous

extended experience with the tests or by virtue of natural aptitude for this type of work, may be termed experts.

(3) The fact that, in the single case where Lieutenant Marston made a wrong judgment, the examiner made a correct judgment, and that in the case where he made a correct judgment upon an insufficient curve he was present at the examination and noted errors in the recording of the b. p., would lead directly to the conclusion that the expert should himself give the examination, in order to be personally cognizant of all the conditions in the light of which the curve must be interpreted.

The general conclusion of the writer from the above reported results, and also from various other applications of the tests in question which are being published elsewhere, is that, at the present writing, a sufficient psychological background probably exists to qualify an expert upon deception in court, and that the use of deception tests in connection with probation office procedure and examination is, beyond question, justified. The writer is conducting at the present time researches in the Harvard Laboratory upon the numerous psycho-physiological problems relative to blood pressure behavior under varying psychological conditions, and it is to be hoped that long before the legal problem of such tests is solved the fundamental psycho-physiological elements will be rather clearly analyzed out. Meanwhile, the legal application of these tests presents a very interesting problem which, as the forerunner of an endless series of problems concerning the introduction of psychological tests into legal procedure, seems worthy of immediate consideration.