


Summer 1934

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Recommended Citation

Leonarde Keeler, Debunking the Lie-Detector, 25 *Am. Inst. Crim. L. & Criminology* 153 (1934-1935)

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POLICE SCIENCE



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DEBUNKING THE "LIE-DETECTOR"

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"Lie-Detector Solves Murder," "Suspect's High Blood-Pressure Thwarts Lie-Detector Test," "Machine Says Suspect Lies," "Suspect Says Machine Lies." Such newspaper headlines and their accompanying stories are taken up by paper pulp magazines with fantastic elaborations. News stories on this order blossom forth when deception tests are made at police stations, for reporters insist upon being present, photographers attempt to snatch a picture or two, and when the operator withholds results the journalist cheerfully offers to the public his own conception of them. Laymen are led to believe that indicators jump in a defined manner when a subject lies, or that a little red light flashes, or that a bell rings. Certain so-called experts refer to their instruments as "lie-detectors," and give the impression that they really have such a device.

To begin with, there is no such thing as a "lie-detector." There are no instruments recording bodily changes, such as blood-pressure, pulse, respiration, or galvanic reflex, that deserve the name "lie-detector" any more than a stethoscope, a clinical thermometer, or a blood count apparatus with a microscope can be called an "appendicitis detector."

However, deception, guilt, or innocence can be diagnosed from certain symptoms just as appendicitis, paranoia, or any other physical or mental disorder can be diagnosed. In every case, the examiner must make his diagnosis from tangible symptoms, using whatever

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mechanical aids he has at his disposal. For instance, a patient is found to have a temperature of 102 degrees F., rigidity and pain in the appendix region, and a high leucocyte count. From this combination of symptoms the physician concludes that his patient is suffering with an infected appendix. Or, in another case, the patient has delusions of persecution, either systematized or ever changing fantasies, and various other symptoms which lead the psychiatrist to render a diagnosis of schizophrenia or some other psychopathic condition.

In detecting deception, the same general procedure is followed. Certain situations, or conditions produce emotions which are accompanied by bodily changes. The flushing of anger, and the paling with fear, for example, need no introduction. But to discover, measure, and evaluate the less obvious bodily changes which accompany the emotions involved in deception requires just as much specialized care as the physician must exercise in making a complicated medical diagnosis.

There are five main factors involved in the diagnosis of deception, all of which must be considered in conducting the tests. These are:

1. Mental processes involved in the act of conscious deception;
2. Voluntary and involuntary changes in the physiological processes which accompany the mental processes;
3. A suitable combination of instruments for recording bodily changes involved in the deception syndrome;
4. An examination procedure for stimulating the mental processes in order to touch upon guilt complexes without otherwise disturbing the psycho-physical equilibrium;
5. An experienced examiner to properly conduct the examination and interpret the resulting combination of symptoms.

1. *Mental Processes:*

Although little is known concerning the mental processes involved in deception, the apparent effect is observed in the bodily changes accompanying the emotion of fear, primarily fear of the consequences of exposure. Awareness on the part of the guilty subject of the procedure and of the resultant physiological changes intensifies this fear, thereby further accentuating the accompanying bodily changes. Then, often, a conscious effort is made to prevent exposure. A subject, familiar with the principles underlying the deception

test, will frequently attempt to suppress any physical changes and, in so doing, affects certain semi-autonomic muscular movements. If the test procedure is properly controlled, the innocent subject will have no fear symptoms, and therefore will make no conscious effort to control non-existing physical disturbances.

In simple experimental tests, where the only consequence of detection is defeat in a "game," fear may persist as a minor factor, but attention to the situation, resulting in physical tension followed by relief, will exist as a major factor. In other situations, the arousing of memories of experiences, either pleasant or unpleasant, may establish an emotional tone similar to that existing with the experience itself. After the disturbing conscious factors have been removed, by confession, emotional equilibrium is usually restored. In certain types of insane patients, specific emotional responses are non-existent and therefore with them this method for diagnosing deception is of no value.

Even though little is known of these mental processes in deception, diagnosis is still possible by recognition of the products of the processes, just as insanity can be diagnosed from symptoms although the basic mental processes are unknown; or cancer can be diagnosed, although the cause of the disease is still a mystery.

2. *Physiological Processes:*

The impossibility of observing or recording mental processes as such necessitates the indirect method of recording the bodily changes which accompany most mental activity. Physiologists and psychologists have endeavored to correlate physiological and cerebral manifestations, with a fair amount of success. It is well known that most conscious mental disturbances have their physical correlatives although absolute specificity is yet undetermined. Certain of these physical changes are under voluntary control, such as changes in the skeletal muscles, while others are quite autonomic and involuntary, such as in pulse rate, blood-pressure, activity of the sweat pores, salivary glands, pupillary reflex, blood-chemistry, etc. Respiration is also involuntary, but consciously controllable to a certain degree. All of these involuntary physiological processes, and often the voluntary musculature, come into play with mental activity. Mental and physical processes are integral parts of the whole animal mechanism, the functioning of one depending upon the other. Therefore, in determining the processes involved in deception and concealment, cer-

tain of the voluntary and involuntary bodily processes are recorded, and used as criteria for diagnosis.

This system of diagnosis is no more infallible than other diagnostic methods. Sometimes symptoms are not sufficiently pronounced and sometimes one of the seemingly specific symptoms is lacking. Often tests, subsequent to the first, will reveal symptoms previously unrevealed.

In the diagnosis of pneumonia, the physician observes the respiration, measures the body temperature, listens to the heart and respiratory sounds. And yet certain of the typical symptoms may be lacking, or not observed even though pneumonia is present. In obscure cases, the physician may be loath to arrive at a decision after the first examination, or even through the whole course of the disease he may be uncertain. In the recent epidemic of amebic dysentery, many sufferers died. The symptoms in such a case may be similar to appendicitis and, unless physicians happen to be aware of an epidemic, the offending ameba is seldom found; this one diagnostic factor may be overlooked, a mistaken diagnosis of appendicitis made, an operation performed, and the surgeon's mistake buried.

Even in the highly respected medical arts, there is nothing infallible; nature plays tricks even on the best of diagnosticians. However, nature is sufficiently uniform so that in the great majority of cases a certain group of symptoms, mental and physical, point unerringly to a causative condition, whether it be appendicitis, dementia praecox, or deception.

3. *Diagnostic Aids—Instruments:*

The greater the number of symptoms observable, the more accurate will be a diagnosis. In medicine, at its beginning, the only symptoms contributing to a diagnosis were those outwardly observable. The early physician felt the body temperature with his hand, palpated the chest wall with his fingers, and examined the eyes, the skin and heart beat with his unaided sense organs. As science equipped him with helpful instruments the physician found symptoms, previously unknown, accompanying various diseases, and even discovered many new diseases the symptoms of which could be revealed only through instrumentation. In the examination of the heart, the physician's fingers and eyes gave way to the stethoscope, blood-pressure apparatus, and the electro-cardiograph.

In the dawn of science, certain outward manifestations, accompanying fear, anger, rage, and other emotional states, were noted; in

more recent years, many additional symptoms of emotionality have been observed and recorded with highly developed physiological and chemical techniques. Many police investigators, and even jurists, base their judgments of innocence or guilt on behavior symptoms. Judges in court are permitted by law to call to the attention of the jurymen these various physical manifestations of witnesses or defendants. Frequently these outward manifestations are symptoms of deception, or guilt, but they may be confused with embarrassment or fear.

Psycho-physical patterns are more easily and accurately revealed when all of the known symptoms can be observed, and continuously recorded for study. Many outward manifestations can be controlled, hence the necessity of using instruments for recording the internal involuntary changes. The more of these physiological processes recordable, the more complete will be the symptomatic pattern. Nerve impulses, blood-chemistry, stomach or intestine peristalsis, glandular activity, etc., cannot be easily studied without discomfort or injury to the subject, but certain secondary changes related to these more obscure manifestations can be recorded quickly, accurately, and harmlessly. A number of instruments are combined into one. The cardiograph records the pulse wave, the sphygmograph records the blood-pressure, the galvanograph records the galvanic reflex (which closely follows the activity of the sweat pores), and the pneumograph records the respiratory movements. The whole is technically referred to as a pneumo-cardio-sphygmo-galvanograph, more commonly as a polygraph (many graph instrument), but erroneously called a "lie-detector." Various instruments of this type have been devised and used for medical, experimental and diagnostic purposes. Some have included two recording units of one combination or another, and others three or four units.

For comparative purposes, each bodily process should be recorded in standard units of measurement. The cardiograph should indicate the pulse-pressure in units of m.m. of mercury, and the pulse rate in units per minute; the sphygmograph should record blood-pressure in m.m. Hg.; the galvanograph in ohms resistance; and the pneumograph in air volume or chest and abdominal expansion and contraction in units of standard measurement. The recording of these quantitative measurements has not been attained in all instances, but experimenters are rapidly discovering new methods for accomplishing the desired results. Later, possibly, methods will be found for conveniently recording other voluntary and involuntary manifestations, thereby enhancing the accuracy of the diagnostic method.

4. *Examination Procedure:*

During certain physical examinations, the physician demands definite conditions. Before a basal metabolism rate can be taken, the patient must refrain from eating or drinking for several hours; he must rest quietly for fifteen or twenty minutes before the test, and must be undisturbed during it. If any of these conditions are ignored, the test results will be unreliable. Other examinations must be conducted in darkened rooms, or in quiet environs. All sorts of conditions are required for properly conducting various diagnostic tests.

This is true in the conducting of deception tests. Man responds almost continuously to his immediate environment, to other individuals, to sounds, odors, pain, and other stimuli factors. Therefore, since the value of the deception test depends upon bodily responses to certain mental stimuli, all attending circumstances must be devoid of irrelevant factors. Those that cannot be eliminated must be kept constant throughout the examination.

In order that the effect of existing environment, the present emotional state, and the physical condition of the subject may be determined, a polygraph recording is made for some minutes during which time no questions are asked. Whatever the existing physiological and emotional condition might be, the resulting polygraph curves indicate the "norm" for the period of the test. After this "norm" has been established, two or three irrelevant questions are asked—then questions pertaining to the crime, intermingled with other irrelevant questions. Each question must be worded briefly and call for a "yes" or "no" answer. The examiner's mode of asking questions must be uniform as to rate, volume, and inflection of speech all through the test. Although there are several test procedures to be used, depending upon the circumstances involved in a particular situation, in all, general conditions must be kept uniformly controlled and carefully standardized.

5. *Competent Examiners:*

The stethoscope is an indispensable instrument to the physician. With its aid, the average individual can hear heart and respiratory sounds. To the untrained person, however, the sounds are quite meaningless; but to the physician, with his extensive training and experience, they mean health or disease. It is used to aid the physician in discovering physiological or pathological conditions which are outwardly obscure in the diagnosis of tuberculosis, pneumonia, and

cardiac disorders. But no matter what diseased condition is being sought, the instrument is still called a stethoscope, and not a T. B. detector, a pneumonia detector, or a leaky heart valve detector. It is merely a diagnostic aid to an experienced examiner.

Almost anyone can operate a polygraph as well as he can hear sounds through a stethoscope, but only individuals with training and long experience can interpret the resultant recorded curves. The inexperienced operator cannot diagnose deception with a polygraph any more than he can diagnose a cardiac murmur with a stethoscope.

A surgeon obtains his skill through many years of training in basic medical subjects. Biology, physiology, chemistry, and physics lay the foundations for his actual medical training; anatomy, bacteriology, and pharmacology lead him on to clinical studies; and finally, after eight long years, he is ready to learn the art of surgery by practice. He commences as an assistant, and sometimes spends years before he finally becomes a competent surgeon. What a sad human tragedy it would be if anyone could purchase a few diagnostic instruments, some scalpels, forceps, and accessories, hang out his shingle and commence practicing on suffering patients! Yes, anyone can purchase medical instruments, but fortunately the state forbids him using them—even on dogs! And anyone can purchase or build a polygraph, or any other medico-legal apparatus and paraphernalia, *but no one can prevent him from shouting aloud that he is an expert or prevent him from practicing on the unsuspecting public.*

Competent men of integrity must be carefully trained to conduct various types of medico-legal examinations, and each should be backgrounded in the particular branch of the profession he is to practice. The legal psychologist must have a background of psychology, physiology, and the more basic sciences upon which they are founded before he starts his apprenticeship in the various legal-psychology practices.

Some day, it is hoped, the state will license (*but keep free from politics*) medico-legal technicians just as it licenses lawyers and physicians today, but in the meantime it rests with the honor and integrity of each member to keep the profession purged of incompetency and dishonesty.