

Dilemma of Lies Detection in Criminalistics Research

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Abstract

This paper provides a critical overview of the scientific status of lie detector test (or polygraph test). The test consists of simultaneously monitoring several of the suspect's physiological functions - breathing, pulse, and galvanic skin response - and printing out the results on graph paper. The theory underlying a lie detector test is that lying is stressful, and that this stress can be measured and recorded on a polygraph machine. Polygraphs are perhaps the most controversial tool in law enforcement. Crime dramas have long depicted the polygraph's tangle of wires and wiggling chart lines uncovering lies during a hard-boiled criminal interrogation. As suspects are questioned, the device checks for sweaty skin or racing hearts to root out deception, but the machine's accuracy has long been in dispute. The paper analyzes the scientific legitimacy and the legal regulations of the use of polygraph test in Lithuania. The aim of this *article is to* familiarize readers with lie detector test (or polygraph test) and to critically evaluate it.

Keywords: lie detection, polygraph test, psychophysiological examination

1. Introduction

The theory is that when a person lies, the lying causes a certain amount of stress that produces changes in several involuntary physiological reactions. A series of different sensors are attached to the body, and as the polygraph measures changes in breathing, blood pressure, pulse and perspiration, pens record the data on graph paper.

During a lie detector test, the operator asks a series of control questions that set the pattern of how an individual responds when giving true and false answers.

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Then the actual questions are asked, mixed in with filler questions. In the study by Gale (1988), concluded that Polygraphs are perhaps the most controversial tool in law enforcement. In theory, the polygraph relies on the different responses of the guilty and innocent to "relevant" and "control" questions during an interview. A big problem is that it's not really a test of anything, the polygraph can measure physical reactions, but beyond that, nobody knows how the nervous system acts when it is lying. Nervousness, anger, sadness, embarrassment, and fear can all be causal factors in altering one's heart rate, blood pressure, or respiration rate. There are also a number of medical conditions such as colds, headaches, constipation, or neurological and muscular problems which can cause the physiological changes measured by the polygraph. Some people may fear that the machine will indicate they are lying when they are telling the truth and that they will be falsely accused of lying. Furthermore, even the most ardent advocate of the polygraph must admit that liars can sometimes pass their tests. In one developmental study (Wronska, 2011) concluded that the story of lie detection using polygraph is over 100 years old, the world sticks to different opinions on psychophysiological research scientific validity, legal regulation, the very psychophysiological research benefit and importance in investigating criminal acts. Honts, Raskin, and Kircher (1994) state that the polygraph accurately captures all the physiological changes that occur in the human body in response to the research questions.

Most tests, used in psychophysiological research, are based on the so-called benchmarking appliances questions: questions related to the object of research and comparative issues compelling to maneuver or simply lie. This methodology is based on a different reaction of an investigatory to these two types of questions (Horowitz, Kircher, Honts, and Raskin, 1997). Widacki and Konieczny (2009) state that psychophysiological research results largely depend on the specialist who analyzes the instrument readings. The specialist must understand and analyze everything.

One of the main crime control levers is detection of criminal acts and implementation of the principle of inevitability of punishment. Pre-trial investigation authorities are unable to effectively procedurally cover significantly increased and qualitatively changed crime using conventional, traditional techniques. Consequently there is the need for new detection methods, meaningful information meaningful information with criminalistics and proved circumstances search.

Saxe and Ben-Shakhar (1999) state that scientists have tried to explain naturally and scientifically justified the complex processes that take place in the human psyche and the body, and which giving the question to the investigatory, help clarify the concealed information. Processes that take place in the human body and psyche, when he is questioned using the polygraph, understanding and receiving is important not only for the scientists, as the theory and the subject matter, but in principle is very important in practice, because an understanding of these processes can increase the efficiency of research application and scientifically justify its application. This problem is reinforced by the fact that Lithuanian educational institutions do not have a course of polygraph research. A theme is relevant because each country has always been and will be needed not only operative, but also detailed, complex research of crime, and the fight against it, applying scientific advances in the field of forensic science. Individual psychophysiological researches to investigate offenses have been conducted in Lithuania since 1992. The psychophysiological research analysis and review of this investigation open applications for investigating criminal acts done in this paper, would provide additional information for pre-trial investigation officers and the ability to investigate and apply psychophysical researches widely, clarifying the offenses.

Subject of the work - Psychophysiological research and its application.

The aim of this article is to familiarize readers with this type of polygraph interrogation and to critically evaluate it.

Hypothesis: Psychophysiological research application makes it possible to detect and investigate criminal acts effectively and successfully.

Methods of the work. The chosen subject was analyzed on the basis of comparative and systematic methods of analysis, and on the basis on the Republic of Lithuania laws and other legal acts regulations.

2. The Nature of the Psychophysiological research and the Possibilities of application investigating Criminal acts

Are lie detectors telling the truth? You may wonder how, in the absence of a confession, a polygraph operator can confidently determine whether a person is lying.

Don't most people - even innocent ones - get stressed when being asked questions that might land them in big trouble? Yes, but the polygraph operator has techniques to overcome this problem. Iacono and Patrick (1999) state that before getting to the nitty-gritty of the issue ("Did you do it? Were you there? Do you have any personal knowledge of what happened?") the operator first asks a series of questions, some of which are emotionally neutral and some of which are calculated to cause emotional discomfort based on the test subject's personal circumstances. Supporters of lie detector tests claim that the test is reliable because:

1. Very few people can control all three physiological functions at the same time;
2. Polygraph examiners run preexamination tests on the suspect that enable the examiners to measure that individual's reaction to telling a lie.

On the other hand, critics of polygraph testing argue that:

1. Many subjects can indeed conceal stress even when they are aware that they are lying;
2. There is no reliable way to distinguish an individual's stress generated by the test and the stress generated by a particular lie.

The courts in most jurisdictions doubt the reliability of lie detector tests and refuse to admit the results into evidence. Some states do admit the results of polygraph tests at trial if the prosecution and defendant agree prior to the test that its results will be admissible. There are three basic approaches to the polygraph test:

1. The Control Question Test. This test compares the physiological response to relevant questions about the crime with the response to questions relating to possible prior misdeeds. This test is often used to determine whether certain criminal suspects should be prosecuted or classified as uninvolved in the crime.
2. The Directed Lie Test. This test tries to detect lying by comparing physiological responses when the subject is told to deliberately lie to responses when they tell the truth.
3. The Guilty Knowledge Test. This test compares physiological responses to multiple-choice type questions about the crime, one choice of which contains information only the crime investigators and the criminal would know about.

Is there any evidence that the polygraph is really able to detect lies? The machine measures changes in blood pressure, pulse, and respiration rate. When a person lies it is assumed that these physiological changes occur in such a way that a trained expert can detect whether the person is lying. Is there a scientific formula or law which establishes a regular correlation between such physiological changes and lying? No. Is there any scientific evidence that polygraph experts can detect lies using their machine at a significantly better rate than non-experts using other methods? No. There are no machines and no experts that can detect with a high degree of accuracy when people, selected randomly, are lying and when they are telling the truth.

Psychophysiological investigation relates to human psychological and physiological reactions - breathing, pulse and blood circulation in fingers, skin electrical resistance, fingers tremor, and other possible test parameters - even the smallest mimic changes, bloodstream circulatory capture in facial areas using the infrared camera, mood changes, and so on. These physiological reactions appearance is an immediate consequence of human psychological reactions (stress, tension, fear, anxiety and so on) to the given questions. Psychophysiological research a specific is that there is caused the relevant emotions to the investigated person and the sensors connected to human body record physiological changes occurring in the human body.

One physiological reaction can be partially controlled; the other physiological reactions are out of control. It should be accepted that a person can control breathing the best, but only if he is thinking about this, but if he has to think, and answer questions, breathing normally is becoming out of control and obeys common emotional changes caused by the body's reactions, and, thus, it can be concluded that breathing changes measurement and recording can be a reliable physiological indicator in order to clarify lies (Jaworski, 2006). Cardiac activity changes are more specific in relation to breathing changes, because changes in heart rhythm cannot be voluntarily controlled, and this could reveal the emotional feelings of people and tentatively - whether a person is telling the truth. It cannot be categorically confirmed that the person under investigation cannot regulate his action of the heart. There is a special training that helps a person after many years of training to manage cardiac activity:

heartbeat, blood pressure, and respiration. Skinelectrical conductivity measurement is one of the most popular measurements and is characterized by that, according to current scientific achievements-it's totally out of control process of the body, and analysis of the research suggests that skinelectrical conductivity varies according to the person's emotional state, so that indicator may be a very reliable physiological indicator in order to expose the lies. Another physiological indicator is muscular changes. Although muscular tension changes registration is not widely used at present, but it can be an effective auxiliary tool for recording physiological changes as well as key indicators may help to clarify the cases when the person under investigation aims to distort this physiological indicators- heartbeat, blood pressure, respiration, intentionally tensing muscles.

Psychophysiological research usability investigating criminal acts is almost endless: the larger efforts are being made to hide information, the stronger are expressed body reactions in the nervous-mental field of the person under investigation, the more clearly are recorded physiological changes. Polygraph accurately captures all the physiological changes that occur in the human body while he is answering the questions. In the study by Konieczny (2010) concluded that psychophysiological tests are not widely used in any country in the world as in the United States of America; and not only to investigate criminal acts, but also the personnel selection as a preventive measure (to determine honesty, reliability, links to criminal organizations of a candidate, who aims to occupy certain positions). Konieczny and Wilcox (2009) state that many of these studies are done in Canada, Japan, Israel, Hungary, Turkey. However, there are other examples: Psychophysiological research, developing criminal acts, in the Scandinavian countries, Germany and Austria, is attributed to the prohibited methods category, on the grounds that such research violates the personal freedom of choice and will, therefore while interrogating is not allowed, in addition, this research does not have a scientific basis and are not reliable. Switzerland is considered that the use of a lie detector during the interrogation, even with the agreement of the person, is contrary to human dignity and the right to personal freedom to decide and act respectively, in addition, it specifies that such methods the person under investigation makes object from the process subject and it damages the image of the legal system.

Legal regulation of the use of psychophysiological research started in 2000 in our country, when Lithuania has adopted the act of the polygraph use in the Republic of Lithuania and when the Republic of Lithuania has approved polygraph research rules. In many countries, including Lithuania, psychophysical research can be undertaken investigating criminal acts only under the following conditions:

1. Voluntary consent of the person under investigation and the refusal to examine oneself cannot be used against him;
2. Test results cannot be self-sufficient basis for identification of any person guilty (innocence).

Saldžiūnas and Kovalenka (2011) state that Republic of Lithuania Law on the use of polygraph regulates the psychophysiological research application, subjects and cases when it is possible to apply this research, and provides subjects and persons' under investigation rights. Under the law, polygraph examinations in Lithuania can be performed by the Ministry of Interior authorized institutions, The State Security Department, the Special Investigation Service, and Second Investigation Department under the Ministry of Defense, and the institution authorized by Ministry of Finance. According to the law on the use of polygraph psychophysiological test may be carried out only by these subjects and only in the following cases: public institutions, which authorize psychophysical research and other public institutions - public servants, officers and soldiers, whose duties are related to the use of confidential information, security or accessing to it, as well as those selected for the service, which is related to the use of confidential information, security or accessing to it, when:

1. There is addressed issue of a work permit, or access to confidential information issuance or cancellation if there is reason to believe that a person has concealed or made false biographical facts or other information about himself and his environment;
2. Verification of personal service, internal or operational research, according to the laws and regulations established procedure;
3. There are investigated crimes, and other offenses, including disciplinary offenses for which the persons are suspected if the acts under investigation are related to confidential information or such information handling and storage irregularity;

4. There is reason to believe that there is made unlawful influence for a person, and that influence has a value for determined access, working with confidential information policy, and the use of such information, and storage;
5. There is person's request for are-psycho-physiological investigation.

Investigating Criminal acts and applying psycho-physiological research for the persons under investigation, depending on what data and information is collected, you can: check the reliability of the information submitted by the person; obtain personal information that is relevant and meaningful for the pre-trial investigation, in order to complete the other observation in time; determine a person's involvement or lack of involvement in the preparation and execution of the offense; clarify perjury; clarify the circumstances of the offense; identify or specify the constituent elements of the offense; identify each person's role in the group crime; identify the location where are the hidden objects, which have value for the research; identify the location of fugitives; identify accomplices.

The most important factor that ensures high efficiency of polygraph research is the formation of suitable testing conditions - expertly gathered primary information about the event and the important information for the investigated event, voluntary consent of the person under investigation, and his psycho-emotional and health status. It should be emphasized that, how much time has passed since the offense date is selected according to the Psycho-physiological research tactics: if the offense was committed not long time ago, then the questions related to the small, non-essential details of an event that definitely should have been noticed by the perpetrator, can be given to the person under investigation, and the random person does not know this information; however, if the offense was committed long time ago, then is a high probability that the person under investigation will not remember the event details, and so Psycho-physiological research applications and relevant information obtaining level is lower. During psycho-physiological investigation must be used for video and audio recording equipment, which helps not only to capture the same Psycho-physiological research progress, human self-determination to carry out the investigation, and abuse (mental, physical or other) absence. It is very important to set up the test and choose the best and suitable for a particular situation, issues, and it depends on the pre-test, since the current information, posed versions, officials' acumen.

Psychophysiological test accuracy depends on the professional qualifications and expertise. Psychophysiological investigation is not conducted under the following circumstances:

1. The investigated person is intoxicated or under the influence of drugs, toxic or psychotropic substances or has taken medicines that may affect the investigation;
2. The investigated person is suffering from a mental disease or because of pathological condition cannot understand the essence of his actions or control them;
3. The investigated person is temporarily unable to work for health reasons;
4. If it is found that the investigated person's mental, psychological, physiological or physical condition will interfere with the quality of investigation.

During the same investigation, the questions, assuming the investigated person's religious and political beliefs, racial issues and sexual behavior, cannot be asked categorically.

It is assumed that the application of psychophysiological research, investigating criminal offenses, in part could help find answers to part of the pre-trial investigation issues - what data can be dismissed as unfounded, and what can be used for raising criminal investigation versions. It is appropriate to apply this research when there are no other options and ways to assess the pre-trial information reliability and this research is particularly important when there are no opportunities or ways to get the required information, unless questioning the suspect of a criminal offense.

There are disputes and discussions on physiological research applications and use in investigating criminal offenses. Sceptics of this research argue that the essence of psychophysiological research is the research fear that man causes some physiological responses when lying. So far, there is disagreement how to distinguish the rising fear on inspection device from saying untruth (lie)? However, most researchers agree with the statement that it is under a delusion to eliminate and not to apply these researches for investigation of criminal acts because scientists cannot scientifically justify psychological and physiological changes in lying human body.

It is stated that the person under investigation has strong physiological changes when two different opinions are equally active: the desire to tell the truth and the desire to lie, so the truth setting will be easier the more the investigated person will attempt to hide lies. When strong reactions sense and cause is conflict, which means a lie, there is a good chance to go wrong, if the reactions are related to emotional problems. In the study by Undeutsch (2007), concluded an important factor – the investigated person must have motivation, saying the lie. If nothing is independent on the answers, the psychophysiological research will not show the lie.

The person under investigation has to realize that he is telling the lie. If he is convinced that speaks the truth, it will be true of his hand, and the device will not capture any exceptional physiological or body reactions.

As in Lithuania there is no single case on psychophysiological research assignment to the sources of evidence, using the polygraph, the court states in its verdict that such research is not regulated in the Criminal Procedure Code, so the circumstances of this investigation are assessed so far as they are compatible with the collected and investigated evidence. The fact that the Lithuanian court psychophysiological findings increasingly present together with other evidence that is relevant to investigation and examination of the case, is a big impulse and recognition of opportunities of special information use. Psychophysiological investigation may be an effective and reliable tool which can get the details, which properly applied, can effectively implement justice in the country.

Under our data, psychophysiological research is most often applied in criminal cases investigating the murders, in Lithuania. This is explained by the fact that human life is protected as an absolute value, which no one should infringe upon the rights. Criminal cases involving human life are given much attention, such cases should be investigated and disclosed, applying all possible methods to explain the circumstances of the offense and the wrongdoer. Psychophysiological researches conducted in criminal cases have their own specific feature – almost all psychophysiological researches in all criminal cases were conducted as a last shift, i. e. During the preliminary investigation were used up all the possibilities to gather additional evidence – according to recorded investigated persons psychophysiological responses to certain questions' answers aimed to establish and verify some circumstances related to the information evasion or false information, and the defendants voluntarily agreed to be examined by polygraph to prove their innocence.

Other Psychophysiological research of investigating criminal offenses direction is to identify one of several suspects. It is observed that in most cases those persons who claim they have not exercised or have not participated in the offense, and would like to prove their innocence with the help of polygraph, agree to be examined by the polygraph. Furthermore, it cannot be excluded that there is disseminated information about the application and opportunities of this investigation among the detained (arrested) and sentenced ones.

This has an impact on that the investigated persons refuse the research or before the test drink medicines, smear glue on the finger-ends, or try to influence outcome of research by inhibiting respiration. The pre-trial investigation researchers who Investigating Criminal offenses are often faced with a false report of a criminal of false and perjury. Another Psychophysiological research application's, investigating criminal offenses, direction is perjury interpretation.

It is necessary to note that not in all cases psychophysical researches have been refused to make on objective reasons – on prospectlessness, lack of information, lack of cooperation with a specialist, and also on subjective reasons - being drunk during the investigation, the missing data on the investigated person, investigated person's disease, simulation. There may be cases when investigated person during the criminal is under the influence of alcohol or drugs. It should be assessed whether a person in such state can remember the details of the event due to intoxication. After the evaluation of humane evidence sequence, consistency, instruction, there is made a decision to apply or not to apply the polygraph examination.

In some cases, the pre-trial investigator or prosecutors, using polygraph examinations do not disclose the circumstances that are associated with the investigated person's perception of the circumstances - investigated person's mental illness (schizophrenia, debility), investigated person's physical properties (hearing, seeing). All of these circumstances affect psycho physiological investigation because asking the investigated person and answering, a specialist must be sure that the investigated person has heard and understood the answer, has seen pictures or tools during the investigation.

There are cases when a person agrees in writing to be examined by polygraph; pre-trial investigation information is analyzed, the questionnaire is drawn up, but the investigated person, affected by advocate provide a certificate or a document showing that a person is suffering from certain diseases.

Critics of the psychophysiological research follow the statement that the investigation is "easily" distorted because it is easy to achieve that the used equipment would record false reactions. For example, it is possible to cover the finger-ends with antiperspirants, which reduces perspiration and prevents sweating due to measured variable skin resistance, there is advised to tread on the hidden pins, bite lips, tongue, or the like during each question. This would cause the same reactions in the body and therefore it would be difficult to distinguish false answers.

What does science offer? Obviously, in order to create perfect lie detector that will always be able to determine whether a person is lying, there is still a need of a lot of information about our brain. Scientists are divided into several camps: one try to establish lie using EEG, which record emitted brain waves and other scientists have high hopes linked with the so-called brain scanners. Magnetic resonance method is also considered to be promising. During this research, there is observed some lying areas in the brain activity; when these parts of the brain work more intensively, higher blood level is consumed. If the device captures it, it is believed that the person is lying. All inventions are promising, but still at the research stage. Like polygraph, each of them has its own disadvantages and limitations. Hopefully, all this will be overcome in the future.

3. Generalization

Preliminary investigation investigator or prosecutor, obtaining criminal proceedings, must have not only necessary theoretical knowledge and practical skills, but also be able to use all possible techniques of modern forensic tools to identify, capture, explore and evaluate the traces of the crime, which would help to clarify the offense circumstances and identify the perpetrators of them. One of these tools is psychophysiological research for the purpose of identifying the information which a person intentionally conceals, or determining the reliability of the person's testimony. It is clear that psychophysiological research application, together with other research methods, and other necessary research process expertise leads to an efficient and successful criminal detection to solve criminal matters.

Psychophysiological research is used if other means of criminal procedure are not possible or fail, when it is not possible from a number of suspected persons to identify the person who has committed an offense, or to confirm that the person involved in the crime, as well as to determine each person's role in the offense, and to specify the offense circumstances, to establish the offense tool, to identify items that have significance to the case, to investigate and examine the location, to confirm order, to clarify the parties' testimonies made during the pre-trial investigation, to check the versions and interpret perjury.

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