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Practical Application of the Polygraph

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Abstract

The polygraph in Ukraine is being rapidly introduced in public and commercial structures, banks, prominent companies, law enforcement agencies. Even spouses are ready to test each other for fidelity relying on a polygraph, as was once the case in the United States and in some respects in Europe. Availability to call oneself a polygrapher, within a relatively short period of time, usually 14 to 21 days, is equal to the availability to be examined by such a specialist with a polygraph. For this reason, there are numerous myths and misconceptions regarding polygraph examinations floating around, influenced by the media, movies, TV shows, TV series, books, exposed authorities, etc. This article explores essential aspects of polygraph testing, covering tasks it addresses, examination modalities, techniques, eligibility criteria, restrictions on testing, procedural details, trust in results, reliability conditions, examiner qualifications, and the non-scientific nature of polygraphology.

Keywords
polygraph, polygraph examiner, lie detector, polygraph testing, coded hypothesis

Introduction
"What, then, is truth? A mobile army of metaphors, metonyms, anthropomorphisms, in short a totality of human relations which have been poetically and rhetorically intensified, transferred, and decorated, and which after long use people think are fixed, canonical, and binding. Truths are illusions which people have forgotten are illusions, metaphors which have become worn-out and impossible to perceive, coins whose imprints have worn off and which now are useful only as metal, no longer as coins." Friedrich Nietzsche (2019, p. 6).

Presently, specialized psychophysiological investigations utilizing the polygraph, or polygraph testing, are gaining significant traction. They find widespread application across various facets of human existence and engagement (Pisanski et al., 2018; Proudfoot et al., 2016; Vrij & Fisher, 2016). The domains where polygraph technology finds utility encompass:

- Psychotherapeutic endeavors.
- Interpersonal interactions.
- Operative-search undertakings.
- Investigative pursuits.
- Judicial proceedings.
- Human resource management, involving both candidate evaluations for vacant positions and assessments of existing personnel, as well as official proceedings.

The primary aim of employing polygraph tests is to ascertain the veracity or falsehood of information provided by the subject (Gordon & Fleisher, 2019; Krapohl, 2015; McGrath, 2017). The polygraph operates as a technological apparatus furnished with sensors capable of tracking the dynamic psychophysiological responses of the examinee in response to the stimuli (test questions). This is achieved by recording physiological parameters related to respiratory activity, cardiovascular functioning, sweat gland secretions, and more (Bunn, 2012).

In the research scientific field, much attention is paid to the issues of reliability of the data obtained on the polygraph (Elaad, 2015; Ginton, 2019; Meijer & Verschuere, 2017; Palmatier & Rovner, 2015). Developments are underway to improve polygraph examinations (Krapohl & Shaw, 2015; Lee & Lee, 2018). In this regard it is important to recognize that the polygraph functions as a component within a broader framework encompassing disciplines like psychodiagnostics, psychophysiology, neurophysiology, and others. In reality, we are discussing an expansive framework of human research methodology, within which the polygraph might serve as a constituent; we underscore this notion with the qualification "likely might serve." As a single instrument among others, a scientist possesses the capacity to employ the polygraph for addressing specific research inquiries. It is worth reiterating: the operative term here is "scientist" (Maltsev, 2021).

"The polygraph is a tool for scientists, with the pivotal emphasis on the term 'scientist'." — Oleg Maltsev (2021).

Methodology

The methods employed in studying polygraph practice depend on the specific goals and objectives of the research. Here are specific approaches that may be utilized:

1. Implementing controlled experiments with polygraph test subjects, incorporating scenarios involving controlled deception or honest responses to evaluate the accuracy of the polygraph.
2. Investigating actual cases of polygraph utilization in diverse fields like law enforcement, scientific research, and private companies. Analyzing polygraph test outcomes and their influence on final decisions or events.
3. Administering surveys and structured interviews to professionals utilizing the polygraph and individuals who have undergone testing. This involves inquiring about perceptions regarding effectiveness, ethical considerations, and personal encounters with the polygraph.
4. Gathering and scrutinizing statistical data concerning polygraph test outcomes. This encompasses examining the prevalence of false positives and false negatives, along with identifying factors influencing polygraph accuracy.
5. Scrutinizing texts and resources pertinent to polygraph use, such as scientific articles, court rulings, laws, and regulations. Identifying key themes, trends, and advancements in the application of polygraph testing.
6. Scrutinizing individual instances of polygraph application, conducting detailed analyses of the circumstances, test outcomes, and subsequent developments. This approach yields a comprehensive insight into the impact of the polygraph on specific situations.
7. Seeking opinions and evaluations from experts in polygraphy, psychology, and law regarding the effectiveness of the polygraph and its applicability in various contexts.

Employing these methods collectively contributes to a more comprehensive understanding of polygraph practice. It is crucial to consider the context and specific attributes of the research question when choosing appropriate research methods. The term 'polygraph practice' can encompass various meanings depending on the context, generally referring to the methods, procedures, and overall implementation of polygraph tests. In this context, the term "polygraph practice" may denote the specific procedures involved in conducting polygraph

tests, encompassing activities such as preparing subjects, administering the test, analyzing physiological responses, and interpreting results. The effectiveness and relevance of a polygraph hinge on the methods employed and their standardization. Additionally, "polygraph practice" can extend to the overall utilization of polygraph tests in diverse fields like law enforcement, private companies, and the military. This broader scope includes considerations of ethics, legality, and the practical effectiveness of polygraph use. It is essential to account for the context and nuances of each situation, recognizing that different standards and practices may exist across various areas of polygraph research and application.

Results

As per the widely recognized general knowledge game Trivial Pursuit, John Augustus Larson is credited with inventing the lie detector in 1921. In his book "The Truth Machine" Geoffrey C. Bunn (2012) states: "The American press certainly considered the issue unproblematic: "The 'lie-detector' machine that records tell-tale changes in heart action and breathing accompanying deception," Survey magazine reported in 1929, "was invented by Dr. John A. Larson in 1921." Larson's lie detector was an "interesting device, with great possibilities" according to The Literary Digest in 1931, "yet even its inventor regards it as not yet perfected" (p. 116).

In 1938, Larson indirectly acknowledged that he had, in fact, created the device in 1921. This appeared to provide some validation to Trivial Pursuit's assertions. However, the debate over the original inventor exists, although that is not the focus of this article.

Practical Application of the Polygraph

Polygraph applications extend beyond crime detection, encompassing various sectors of practical use. Importantly, polygraph examinations are widely used in numerous countries,

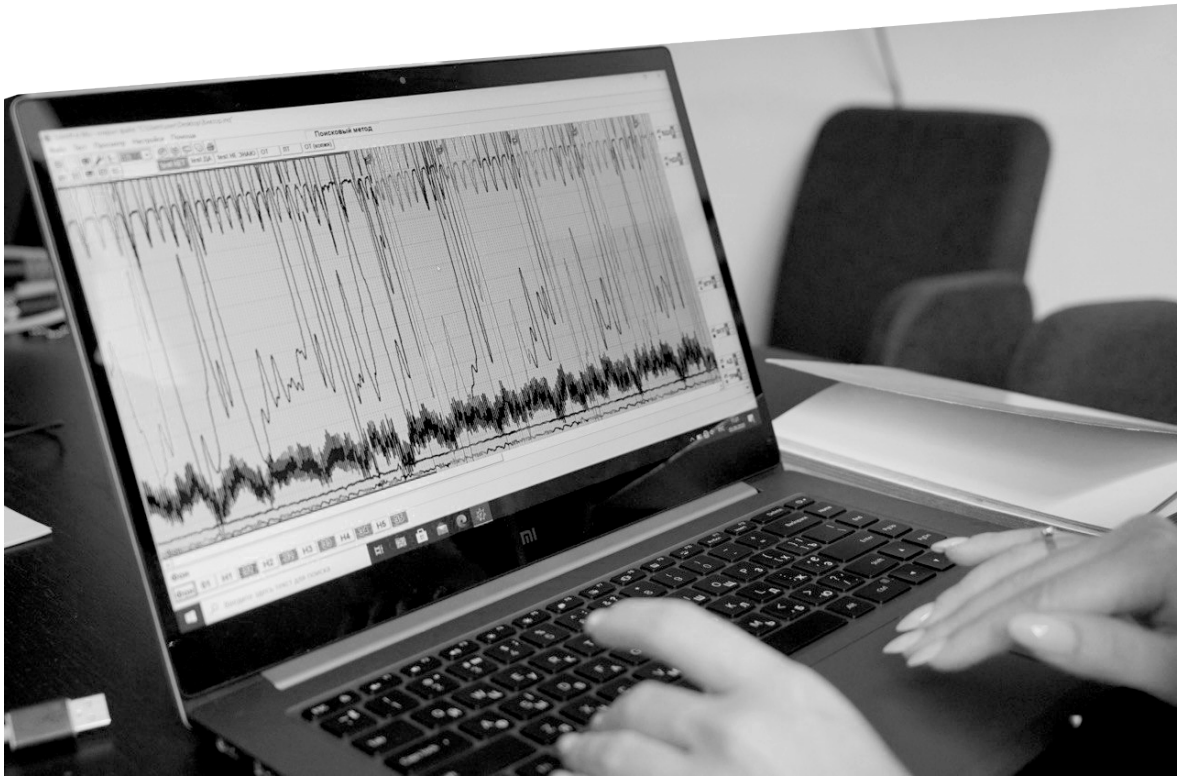

Figure 1. Polygraph testing

and Ukraine is among them, particularly within the private sector. These examinations predominantly involve scrutinizing job applicants, new hires, or conducting reevaluations of existing employees across a spectrum of establishments like hotels, banks, commercial entities, financial institutions, stores, factories, security services, and more. The polygraph is actively harnessed to enhance organizational efficiency.

The facets of personnel assessments encompass the following categories

Motivations for Recruitment. The motives behind an individual's employment are of paramount importance to the employer. These motives can be categorized into two groups: those posing minimal risk to the employer and those that might lead to substantial losses or even the downfall of the enterprise. For instance, an employee affiliated with criminal networks joining a bank's credit department might harbor the motive of "serving third parties." Consequently, such a personnel "addition" might portend ill for the employer. Predicting the extent of negative ramifications and losses is intricate, as rival organizations could exploit proprietary information through such an employee.

Identification of Detrimental Habits. This primarily encompasses substance abuse, such as drug addiction and excessive alcohol consumption. Individuals grappling with gambling addiction also pose a threat to companies. Other detrimental habits that could impact work quality, such as heavy smoking in explosive environments, are also considered.

Insights into Previous Job Departures. Understanding the reasons behind an applicant's departure from their previous job holds relevance. Instances involving team disputes, repeated violations of labor regulations, or causing economic harm to the former employer are particularly pertinent considerations.

Criminal History. Possessing a criminal record typically does not enhance an employee's qualities. In a Moscow bank, an individual with a previous robbery conviction was employed as a shift security manager. Interestingly, his accomplice assumed the role of "security" for the securities vault. Ultimately, they executed a bank heist, leading to the near-collapse of the institution.

Internal Investigations. The polygraph proves invaluable in official investigative processes. For instance, in a prominent Kiev-based firm, following searches and the discovery of funds in a safe deposit box, it emerged that an employee had been leaking official information to a relevant agency. With 15-20 individuals having access to this sensitive information, a specialized polygraph examination singled out the individual responsible for the breach.

Effectively employing polygraph examinations for supervising personnel engaged in handling substantial material assets substantially reduces the pool of potential wrongdoers willing to cause financial harm to the employer. In this light, integrating polygraph usage within an enterprise can address the dual concerns of monitoring new hires and preventing illicit activities through routine evaluations of existing employees.

Validating Questionnaire Data. The willingness to deceive employers can range from 7% to 20% on average, contingent on regional disparities and enterprise prestige. Evaluating applicants for specific roles through personnel assessments enables the identification of predisposition for misconduct.

Amidst the broader spectrum of crimes within credit and financial institutions, instances of substantial monetary theft through computer techniques are notably escalating. Take, for instance, the case of skilled programmer Levin, orchestrating over 40 unauthorized transfers from his bank employer's accounts. Integrating polygraph testing at a juncture like this could have potentially forestalled his criminal trajectory, even capturing the inklings of a potential wrongdoer's intentions.

An employee initially joining a company with honest intentions may undergo negative personality shifts over time due to certain influences. Consequently, regular polygraph assessments for existing personnel are advisable to mitigate such shifts within an organization.

Subsequent Testing

Initial polygraph tests during recruitment exert significant influence in fostering a normalized work atmosphere. Instances of theft predominantly manifest in contexts lacking meticulous oversight of financial flows and products. In this context, recurrent polygraph evaluations emerge as robust preventive instruments. The scheduling and focus of these evaluations are determined by enterprise management. While the timing typically spans from 2 to 5 years for subsequent checks, suspicions of employee malfeasance can warrant impromptu assessments.

Undoubtedly, the aforementioned roster of polygraph applications within private entities remains non-exhaustive. Life's dynamic nature ushers in new, sophisticated methods of unlawful conduct. Nevertheless, adept utilization of the polygraph remains a successful endeavor in detecting potential adverse consequences.

"A liar is someone who clearly knows and understands why and when they are telling the truth or lying, or intentionally hiding information" (Alekseev et al., 2015, p. 28).

The polygraph serves to:

- Assess a candidate's suitability for a job or specific position.
- Determine involvement in illegal activities.
- Establishing whether the person was involved in a particular event.
- Locate a sought-after object.

Phase of preparing

During the initial phase of preparing for a polygraph test, information is gathered and the context of the case is examined. Communication with the initiator of the test (the client) takes place to define the study's goals and objectives. The polygraph examiner comprehensively analyzes all pertinent information regarding the investigated event and engages in an in-depth conversation with the individual leading the proceedings, such as a security officer or a human resources officer. In preparation, the specialist selects the data they intend to use during the polygraph examination.

In the subsequent stage, if feasible, a preliminary conversation or brief interview with the candidates for verification is conducted. Throughout this conversation, the polygraphologist acquaints themselves with the subjects, clarifies their knowledge about the ongoing investigation's facts, inquires about their personal viewpoints, and uncovers any suspicions they might have.

The third stage involves organizing the testing process, where the expert polygraphologist makes important organizational decisions such as:

- Determining the number of individuals to be tested per day.
- Setting the starting time for testing and planning the order in which candidates will be tested throughout the day.
- Typically, around 2 to 5 examinations are conducted in a day. The optimal testing time usually falls between 09:00 and 17:00. However, it is worth noting that specific conditions for conducting polygraph examinations might not always be readily available to both the customer and the polygraph examiner.

Ideally, the examination room should meet certain requirements:

- The room should have an area of 5-12 square meters, with a ceiling height of at least 2.5 meters. The temperature should be within the range of 20-24 degrees Celsius, and humidity should be maintained between 70-80%. External noise levels should be minimized, lighting should be comfortable, and ventilation should be effective.
- Soundproofing material on walls and ceiling, as well as neutral and soft-colored paint, contribute to a suitable environment.
- The room's location should minimize exposure to traffic noise, and it should be free from strong electrical devices that can introduce interference (like transformer boxes or elevators). Sudden acoustic disturbances such as phone calls, cleaning activities, or repairs should be avoided as much as possible.
- The examination room should include a functional table and chair for the examiner, along with a comfortable chair for the examinee to ensure their comfort. The chair for the subject should be stable and without wheels, offering wide armrests and a high backrest for relaxation and ease.
- Distractions in the subject's field of vision, such as calendars, clocks, artwork, photos, or stains, should be absent from the room.
- The room setup should enable the subject to be positioned in a way that avoids eye contact with the polygraph examiner during the test. Ideally, the subject should face a wall at a distance of about 2 meters.
- All equipment should be fully operational and ready for use by the time the examinee arrives.

The suitability of the room for the examination is evaluated by the expert polygraphologist, who also considers the arrangement of participants if their number exceeds two individuals. During the polygraph examination, the polygraph examiner determines the presence of individuals in the room (Reid & Inbau, 1977).

Apart from the polygraph examiner and the person being examined, the room might include other parties like a lawyer, cameraman, security officer, or interpreter. In certain cases, the practice of polygraph examinations can involve a scenario where the individual being tested's lawyer urgently insists on being present during the test. In such cases, the polygraph examiner provides instructions to the lawyer regarding their conduct during the test:

- The lawyer is expected to remain completely silent during the test and can make statements only with the permission of the polygraph examiner (indicated by a signal).
- The lawyer and other attendees are informed that not adhering to these instructions could compromise the methodological correctness of the polygraph examination, potentially leading to unfavorable conclusions for the subject under test.

The groundwork for the final result is established during the preparatory stage.

Polygraph tests encompass three distinct phases

1. Interview: This involves a preliminary conversation with the subject before the actual test is conducted.
2. Polygraph Testing.
3. Post-Test Interview: This occurs afterward, when relevant (Matté, 2000).

Getting Acquainted with the Subject

The interview initiates with the polygraph examiner welcoming the subject into the room where the polygraph is situated and introducing themselves. It is advisable to verify the

subject's identification. Ideally, prior to this, the initiator of the examination should have informed the subject that a qualified polygraph examiner will conduct the test.

Pre-Test Conversation (Interview)

During this phase, the optimal psychological state for the test is established: instilling the belief in individuals who are not potential offenders that they will easily pass the test, while conveying to those who are suspected offenders that they are unlikely to pass the test.

This pre-test conversation serves several purposes:

- Establishing a psychological rapport with the subject.
- Helping the subject adapt to the research environment, the examiner, and the polygraph.
- Identifying any factors that could hinder the testing process.
- Familiarizing the subject with the overall procedure and the specifics of polygraph testing.
- Explaining the subject's rights and obtaining their written consent (or refusal) to undergo testing.
- Assessing the interviewee's level of awareness regarding the event being examined.
- Guiding the subject in recalling the relevant circumstances connected to the survey topic.
- Discussing the event or its particulars that triggered the survey.
- Engaging in a conversation with the subject about the content of the questions to be posed during the survey.
- Gathering further insights into the subject's familiarity with the topics under discussion.
- Assuring the subject about the credibility and safety of the psychophysiological "lie detection" technique, which eliminates the potential for incorrect conclusions and renders any attempts at deliberate resistance to the testing procedure futile.

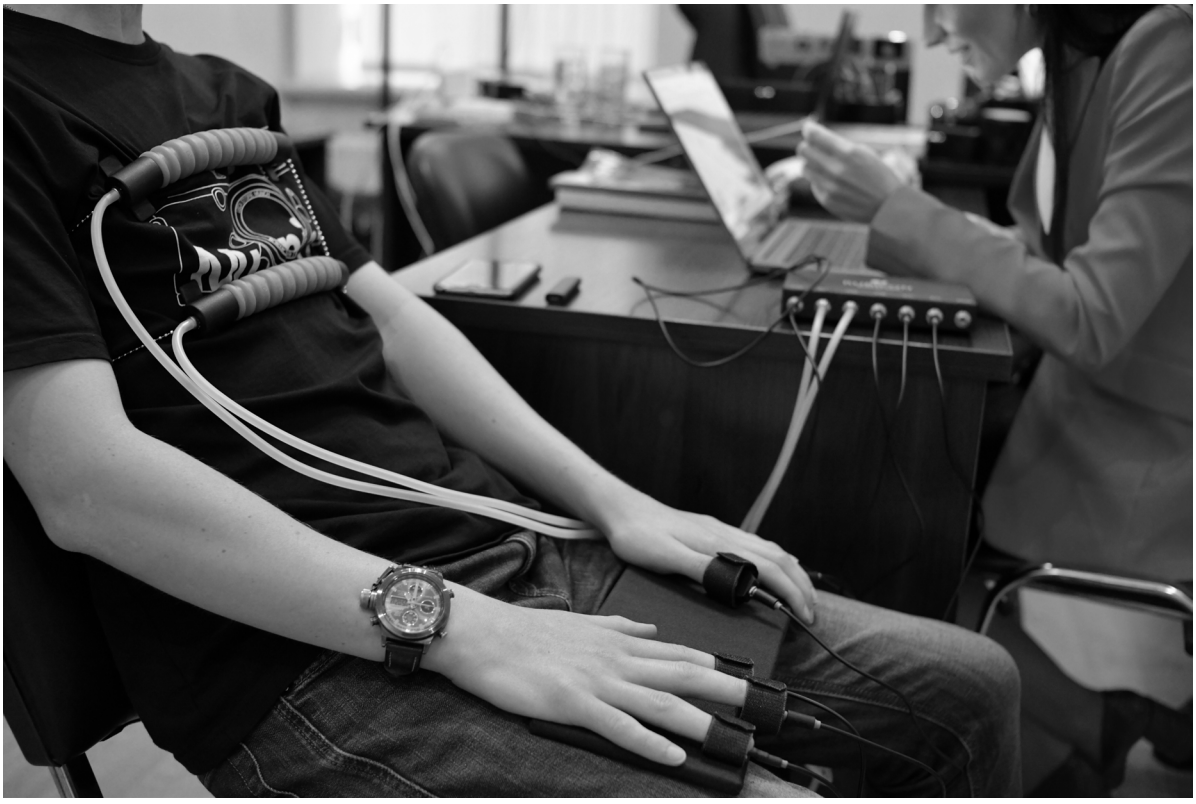

Figure 2. Sensors for capturing cutaneous galvanic response (CGR)

Clarifying the Purpose and Objectives of the Test. The polygraph examiner should inquire whether the subject comprehends the full intent of the forthcoming examination and their perspective on it. In cases where the subject displays a lack of understanding or discontent with the proposed rationale for the examination's necessity, utmost efforts should be made to elucidate the examination's objectives in a comprehensible manner. Emphasis should be placed on the voluntary nature of the procedure and its exclusive purpose of safeguarding the subject's interests.

The polygraph examiner clarifies the test's purpose and its intended goals to the subject. For instance, they might state, "The purpose of this test is to ascertain your involvement or lack thereof in the (elaborate on the event under investigation)."

Outlining the Subject's Rights. The polygraph examiner informs the subject that their participation in the test is entirely voluntary, and no one can compel them to undergo the procedure against their will. The subject's decision to decline participation will be taken into account by the requesting party during their deliberations.

Special emphasis is placed on upholding the confidentiality of the procedure, assuring the subject that no inquiries will delve into their private life, political affiliations, or religious inclinations. Additionally, the examiner assures that the procedure is entirely safe for the individual's well-being.

The subject is informed that the examiner maintains impartiality and neutrality throughout the process, refraining from any form of accusation or exoneration. The examiner's conclusions are derived independently and are not influenced by the initiator's stance, operating on the principle of presumption of innocence. It is crucial to underscore to the subject that there are no reasons for mistrust from the examiner's side.

Identification of Contraindications. There are certain conditions that either prohibit or temporarily impede the administration of a polygraph examination. These are known as absolute and relative contraindications.

Absolute Contraindications: These are instances where a polygraph examination cannot be carried out due to significant health risks. These include conditions like:

- Previous heart attacks or strokes.
- Advanced stages of hypertension.
- Epilepsy.
- Bronchial asthma.

These diseases can be exacerbated or triggered by heightened nervous tension. Polygraph tests inherently induce emotional stress, which, in the presence of these conditions, can potentially worsen their effects. Pregnancy also constitutes an absolute contraindication to undergoing polygraph testing (Verschuere et al., 2011).

Relative Contraindications: These contraindications stem from temporary factors that could negatively impact the test process. However, once these temporary factors subside, a polygraph examination can be conducted. For instance:

- Minor colds with symptoms of congestion.
- Residual effects of alcohol intoxication or hangover.
- Various forms of physical discomfort (toothache, muscle soreness, injuries, etc.).

Polygraph testing is prohibited:

- with respect to a person under 14 years of age (examination of a person over 14 years of age but under 16 years of age shall be conducted only with the written consent of the person's legal representative);
- if the subject is physically or mentally exhausted, as well as if the subject is drowsy or uncontrollably overexcited, unable to coordinate his/her movements, etc.;
- if the specialist has information about mental illness or disorder of the subject, as well as in case of exacerbation of a disease associated with cardiovascular or respiratory disorders;

- if the specialist has information about the use of strong psychoactive substances (e.g. narcotic drugs or strong medicines) by the person or if there are obvious signs of use of such substances;
- when the subject is under the influence of alcohol or drugs.
- if there is an official or other form of dependence between the polygraph examiner and the subject;
- in instances where the polygraph examiner has information suggesting a direct or indirect interest in any outcome of the examination;
- when the subject declines to provide written consent for the examination;
- if the person being interviewed refuses to participate in the examination;
- when the interviewee displays inappropriate physiological or mental reactions;
- if the subject exhibits signs of aggressive behavior;
- if there is a breach of the established requirements for conducting special psychophysical examinations.

If any impediments arise that prevent the survey, the examination is temporarily halted. The decision on resuming the examination is made collaboratively by the polygraph examiner and the initiator of the verification, based on the feasibility of resolving the underlying issues.

Signing the Voluntary Consent. Gaining voluntary consent for undergoing the procedure necessitates formal confirmation through a written statement. If the subject agrees verbally but declines to sign, the testing procedure cannot proceed.

Thorough Familiarization and Background Data Collection. The polygraph examiner conducts a concise yet comprehensive interview with the subject regarding their life history. During this stage, it is advantageous to structure the conversation to elicit a brief (4-6 minutes) monologue from the subject. While familiarizing with biographical data, particular attention is given to the period just preceding the event that triggered the survey, along with relevant aspects. All questions for the pre-test interview are prepared in advance.

When conducting the survey in the context of crime detection and investigation, the focus of the pre-test interview revolves around gauging the subject's awareness of the crime event (when, where, and how it occurred, etc.) and its specific details. It is essential to clarify when the subject learned specific facts, from whom, their version of the event, and any suspicions about the crime.

Explaining the Device's Operation Principle. The polygraph examiner elucidates the operational principle of the polygraph in a clear and accessible manner, addressing any queries the subject might have. Following this explanation, individuals not involved in the investigated event should have no doubts about trusting the instrument and having nothing to fear. For those implicated in the event, it becomes evident that they cannot deceive the instrument. Concluding the pre-test interview, the subject is briefed on the polygraph testing procedure.

At least three physiological indicators must be recorded as a mandatory requirement:

- Respiration (thoracic and diaphragmatic).
- Cutaneous galvanic response (CGR).
- Cardiovascular indices: blood pressure (BP) and/or photoplethysmogram (PPG).

In our specific case, we are examining six registration channels. The sensors are affixed to the subject in the following sequence:

1. Respiratory sensors, consisting of pneumatic silicone tubing, are securely positioned around the subject's body at the upper abdominal level and the chest.
2. Two sensors for capturing cutaneous galvanic response (CGR) are attached to the right hand's index and ring fingers.
3. A photoplethysmogram (PPG) sensor for recording peripheral vascular response is affixed

to the middle finger of the right hand.
4. A sphygmomanometer sensor for blood pressure (BP) measurement is placed on the left thumb or as a cuff in front of the elbow fold.
5. A sensor for detecting tremor and motor activity (MA) is placed on the hips or beneath the hand resting on a table. Alternatively, this sensor can be designed in other ways, such as a cushion on a chair seat.
6. A microphone is positioned on the chest area to capture the subject's acoustic activity.

The polygraph examiner promptly and confidently attaches the sensors to the subject's body, briefly describing their purpose without delving into specifics. Once the sensors are in place, the examiner inquires whether they cause any discomfort and promptly addresses any issues if needed.

During each response, its parameters are evaluated, including:

- Amplitude characteristics.
- Frequency characteristics.
- Latent reaction time (rate of occurrence).
- Reaction duration.

All reactions are assessed by considering and incorporating these parameters.

Polygraph Testing

During the testing phase, the polygraph examiner holds the authority to determine the examination sequence. Typically, the examiner follows the most optimal order, which includes the following steps:

1. **Research Part (Stimulating Tests).** The purpose of research tests is to evaluate the initial psychoemotional state of the subject, understand the characteristics of the autonomic nervous system's response, and psychologically prepare the subject for testing.
2. **Main Testing.** This involves presenting basic, additional, and clarifying tests. The process begins with conducting stimulating tests at the start of the examination. This serves several purposes:

- Facilitates the examinee's adaptation to the testing procedure.
- Assesses the examinee's general reactivity.
- Stabilizes the physiological indicators' dynamics before presenting the main tests.
- Boosts the confidence of an honest examinee in the method's effectiveness, thereby normalizing their psychophysiological state.
- Elevates anxiety levels in examinees uninterested in the objective outcome, leading to heightened reactions in subsequent tests.
- Aids in detecting potential countermeasures that the examinee might employ.

"Known significant" tests, such as using names or numbers, are commonly employed as stimulus tests. In the past, playing cards were often utilized for this purpose, and this type of test is frequently portrayed in polygraph-themed movies. Following the research phase, the polygraph examiner progresses to the main testing phase, adhering to the rules and requirements of the chosen methodology. On average, about 2 to 5 tests are administered on the polygraph, depending on the specific objectives.

Typically, the final interview with the subject takes place after an initial evaluation of the polygraph test outcomes, although it is not always obligatory. This interview is usually conducted in scenarios where doubts arise regarding the subject's sincerity. This may be supported by the presence of consistent and pronounced psychophysiological reactions to the test questions, or when the polygraphologist cannot arrive at unequivocal conclusions. If the initial assessment strongly favors the subject, the final interview might be omitted. In such cases, the polygraph examiner briefly expresses gratitude to the subject for their participation and bids farewell.

Discussion

The application of polygraphs varies internationally across diverse contexts. This synopsis provides insights into the global utilization of polygraphs in different domains. In the United States, the polygraph is prevalent in law enforcement, national security, and governmental bodies. Additionally, its use extends to the private sector, encompassing businesses and organizations, with ongoing debates surrounding its accuracy and effectiveness. In the United Kingdom, the utilization of polygraphs in legal proceedings is restricted, and it is not a customary practice. Nevertheless, certain corporations may incorporate polygraph testing in their recruitment procedures or internal corporate investigations. In Canada, the admission of polygraph results as evidence in court is typically not allowed. However, there are instances where it might be employed, such as in corporate or military investigations. In Israel, the polygraph is widely employed in national security and military recruitment, with additional applications in business and law enforcement. In Australia, the general acceptance of polygraph evidence in court is limited, yet certain companies may choose to utilize it in recruitment processes or internal investigative procedures.

Across European nations, the utilization of polygraphs is generally restricted. In certain countries, its application is contingent upon the subject's consent. The efficacy and legal standing of polygraphs vary significantly between countries, contingent on the specific application context. Some nations opt for alternative approaches, such as psychological interviews, to evaluate the credibility of statements. In South Korea, polygraphs find application in both business and government organizations. They are employed in employee recruitment as well as internal corporate investigations. In China, the polygraph is employed, particularly in business and law enforcement settings. However, similar to other nations, there is ongoing debate regarding the accuracy and efficacy of the polygraph. South Africa utilizes the polygraph across various domains, including law enforcement, business, and governmental agencies. Its effectiveness and admissibility in court may hinge on specific circumstances. It is crucial to recognize that attitudes toward polygraph use can evolve over time, with laws and standards subject to change. These variations underscore the intricate interplay of socio-cultural, legal, and ethical factors influencing the global perception and utilization of the polygraph.

Concerning international perspectives on polygraph practice, there are varied viewpoints and approaches regarding the effectiveness, ethics, and application of polygraph tests. Notable authors and concepts in this field include:

1. John Reid: an American criminalist and expert in interrogation, is credited with creating the Reid Method, a polygraphic interrogation technique. This method incorporates the utilization of the polygraph along with non-verbal communication techniques to identify indications of deception (Reid & Inbau, 1977).
2. William Mouldenhauer, also known as William Moulton Marston (1938), an American psychologist and inventor, pioneered the prototype of the polygraph in the early 20th century. His exploration of the connection between emotion and physiological responses forms the foundation of polygraph testing.
3. Leonarde Keeler (1940), an American inventor and forensic scientist, made substantial contributions to the advancement of polygraphy.
4. Williams L. Douglas (2014), an American psychologist specializing in the study of deception, conducted extensive research in polygraphy. Authoring several books, Douglas delves into the effectiveness and limitations of polygraph testing.
5. Daniel Levitin (2016), a Canadian neurophysiologist and psychologist, is the author of "A Field Guide to Lies and Statistics." Levitin's research delves into the neurophysiological and psychological aspects of deception, with implications for the field of polygraph testing.
6. The American Polygraph Association (APA) is an organization comprising professionals in the realm of polygraphy. This association formulates standards and ethical guidelines governing the application of polygraph testing across various domains.

7. Paul Ekman (2007), an American psychologist renowned for his extensive research on lie detection and non-verbal expressions of emotion, has contributed significantly to the understanding of processes employed in polygraph testing. His work on micro-expressions and facial expression recognition is particularly relevant in this context.

Each of these authors enriches our comprehension of polygraph practice by presenting diverse viewpoints on its effectiveness, ethics, and potential limitations. Through their research and publications, these scholars contribute significantly to the discourse on polygraph application across various domains, emphasizing the imperative for a nuanced understanding of this tool. These individuals and organizations embody distinct perspectives on polygraph testing, providing a foundation for grasping various approaches to this subject.

Conclusions

It is widely acknowledged that polygraphology does not fit the criteria of a scientific discipline. It stands as a coded hypothesis, conjecture, and the like, lacking the crucial aspect of proof that characterizes academic science. In the realm of established science, hypotheses require empirical evidence to substantiate their validity. Merely presenting a hypothesis devoid of evidence does not bestow scientific legitimacy upon a method. So, what does the polygraph provide us? A polygram – a "coded hypothesis." However, a hypothesis remains incomplete without proper proof, rendering it insufficient for acceptance within the scientific community.

Universally, the scientific community agrees that the mere polygram resulting from a polygraph examination is far from scientific. This stance stems from the fact that hypotheses necessitate validation through evidence. There are individuals who genuinely think that the polygraph is accompanied by clairvoyant psychiatrists, astute investigators, and other paranormal individuals who can determine, with a single glance, whether someone is telling the truth or lying.

Consider a polygraph examination as the initial stage of a professional journey – nothing more. In fields like psychophysiology and psychodiagnostics, drawing conclusions based on a sole indicator is infeasible. For instance, psychodiagnostics typically involves utilizing 3-4 tests to derive conclusions. In polygraph practice, where psychophysiological examinations are conducted, a supplementary data verification process becomes imperative.

For instance, during a polygraph examination, test results are acquired, constituting a hypothesis that necessitates validation. This validation can be accomplished through various lines of verification, including:

- operational information;
- psychodiagnostic testing;
- interrogation;
- investigation;
- data collection.

In this context, the Szondi test serves as an exemplary tool. When paired with polygraph results, it provides comprehensive psychodiagnostic insights, thereby confirming or refuting the findings of the polygraph test (Maltsev, 2018). Only under such circumstances can we confidently base decision-making on the outcomes of a polygraph examination.

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