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The Numerical Scoring Analysis Predecessors

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Abstract

In polygraph history, Cleve Backster's "numerical scoring chart analysis" is considered as revolutionizing the manner of polygraph charts analysis. Yet, earlier history of chart analysis, as being reviewed in this publication, lead to the conclusion that the "numerical scoring chart analysis" was more evolutionary rather than revolutionary.

Key words: Chart analysis, Clinical approach, Global analysis, Numerical scoring

Automated scoring algorithm analyzing and interpretating polygraph charts is a standard feature in nowadays polygraphs instruments. It became so basic that we almost forgot that about half a century ago numerical analysis of polygraph charts was not even around let alone automated scoring algorithm.

Until 1960, when Cleve Backster introduced the Backster Zone Comparison Technique, examiners evaluated polygraph charts utilizing the "Clinical Approach" a.k.a. "Global Analysis" technique. As part of this new technique Backster incorporated a new polygraph charts evaluation method which quantified numerically the magnitude of examinees' psychophysiological responses to the relevant question in compare to its' adjacent comparison question, named: the "Numerical Analysis".

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The "Clinical Approach" (a.k.a. "Global Analysis") – Was the old practice of evaluating polygraph charts. Unlike nowadays practice, which makes methodical comparison between relevant and comparison questions, the "Clinical Approach" considered in addition to the examinees' psychophysiological responses (as displayed on the polygraph charts) the examinees' verbal and nonverbal deception behavioral clues as observed in the pretest, and the case data facts as well According to Krapohl & al. (2012): "(The) information beyond the physiological tracings are considered to produce the final outcome". According to Matte (1996): "If the two evaluations (of examinees' behavior and case facts) did not match (the physiological tracing), inconclusive findings would be rendered" (Summers, 1939). Needless to say, that by its' nature the "Clinical Approach" is alien to the slogan: "Believe your charts". Furthermore, considering non-polygraphic information (such as: case data and examinees' behavior clues) may contaminate examiners with a "Confirmation Bias", which in return may lead the examiners toward the non-polygraphic trend (be it pro or con the examinees) resulting in a vices circle of false outcome.

Backster's "Numerical Chart Analysis" transformed the polygraph practice by turning the test data analysis from a subjective analysis to an objective analysis resulting in high reliability chart analysis rate.

Pre "Numerical Analysis" chart quantification methods

Almost all publications reviewing the historical development of polygraph tests, mark two revolutionary mile stones: 1947 when John Reid introduced the Comparison Question Test (CQT) which became the fundamental doctrine of almost all test formats and 1960 when Cleve Backster introduced the "Numerical Analysis". No doubt that both had an enormous impact on the polygraph tests but they were rather **evolutionary than revolutionary**.

The idea of comparison question was practiced earlier, in 1939, when a less famed researchers, Fordham's University head of Psychology department Professor Rev. Walter G. Summers who suggested a test format which included three "significant" questions (relevant) which were followed and compared to questions that were emotion-provoking questions answered truthfully, but one that the examinee would prefer to hide ("emotional standard") (Summers, 1939).

As the case with the comparison question, prior to Backster's introduction of the "Numerical Analysis" various analysis methods which unlike the "Clinical

Approach" distinguish, characterize and rated the examinees' psychophysiological responses were introduced.

In 1936 John E. Winter practiced a scoring method in where the breathing curve was rated as regular or irregular; light or deep. The blood pressure curve was rated as regular or irregular, and medium or strong. Winter gave three levels of significance to the results of each of the methods: 0 for "no significance, nothing to indicate guilt;" 1 for "some significance and points in direction of guilt;" and 2 for "distinct signs of guilt (Winter, 1936).

The "Asterisks Scoring" analysis was another scoring method that was used by the FBI examiners who examined suspects and witnesses in a 1936 Nazi spy ring in New York. Leon G. Turrou the FBI NY based agent who was in charge of the investigation wrote in his book *Nazi spies in America* that each examinee was asked many relevant questions using the Relevant Irrelevant test format. The examiner conclusion to each of the questions were reported in accordance with the response intensity: one asterisk indicated a mild emotional reaction, two a strong emotional reaction, and three asterisks, a very strong emotional reaction (Turrou, 1938).

The "check-mark" analysis was used by John Reid in between the 1950's to the 1980's.

Horvath described the method (Horvath, 2019): "this method did not require the assignment of numerical values to responses seen on polygraph charts. Rather, it required an assiduous, systematic review of response data to each relevant and comparison question in the collected polygraph charts. Check-marks, varying in strength according to the degree of response to each question (sometimes reported as 'small', 'medium' or 'large'), were noted for each question and the accumulated 'check marks' for each question were used to indicate the examiner's chart-based decision; stronger and more frequent marks to comparison questions led to an outcome of 'truthfulness' whereas if the stronger, more pronounced checkmarks were seen at relevant test questions, a decision of 'deception' was in order". The rational of analysis is identical to nowadays Rank Order Scoring System or the Horizontal Scoring System.

In 1959 Backster joined forces with Richard Arther who was a chief associate at John Reid's operation to establish the National Training Center of Lie Detection in New York City. Contrary to Backster, Arther was a keen follower of the "Clinical

Analysis" (Matte, 1996). Horvath suggest that Arther introduced the "check-mark" method to Backster who "borrowed" the concept and replaced the "check-mark" with figures which led to the birth of the "Numerical Analysis" (Horvath, 2019).

Epilogue

Since the polygraph became a key player in our quest for truth, test data analysis progressed from an overall wandering over the charts to advanced sophisticated automated algorithms which increased the reliability of the test data analysis.

However, practitioners should keep in mind that the polygraph charts and consequently their analysis is <u>but just</u> an outcome and a representation of: an appropriate pretest, precise relevant and effective comparison questions, a validated test format and a properly conducted test. Each of these components may affect the examinee's psychophysiological responses and consequently the test data analysis and the test outcome. As long as the examiner conducts an effective pretest, phrases well-constructed relevant questions, effectively presents and explains comparison questions, utilizes a validated test format and properly conducts the test, the output of these proper inputs will result (with high probability) in an accurate result. Contrarily, a poorly conducted pretest, ill phrased relevant questions, improperly developed and presented comparison questions, an invalid (or not validated) test format, and improper test conduct can increase the risk of an error, in spite of applying a highly accurate scoring method.

Valid test data analysis procedure increases the **reliability** of polygraph results (i.e. high percentage of agreement between examiners) BUT it has **NO EFFECT WHAT SO EVER** on the <u>validity</u> of the results (the correlation between the results and the ground truth).

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Investigating Feminicide in Mexico.
The Conversation Management Approach proposal[1]

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Abstract

In Latin America, the investigative interview is still in its beginnings. Currently, most public and private investigators use interview and interrogation techniques aimed at obtaining admission or confession, instead of applying Investigative Interview techniques focused on information gathering. This document provides an overview of the Conversation Management Approach. This is an investigative interview technique used to interview uncooperative

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criminal suspects, such as those accused of feminicide. An example of how to apply the technique in a case of feminicide is shown, to serve as a guide to good practices. This technique consists of three phases that must be considered when administering and applying the interview. In the first, the behavior before the interview is reviewed, in which the planning and preparation of the interview was carried out. The second phase is the interview to elicit information, which consists of a variety of questioning style techniques, explanation of procedures and instructions to follow, rapport building, and clarification of information. The third phase is called the post-interview phase, which consists of closing and evaluating the entire interview process. The objective of this work is to provide Latin American interviewers with information on the best practices in investigative interviews used in other countries, to raise their aware of the need for training in this area. The correct application of investigative interview techniques is essential to investigate crime, and training of interviewers in this type of technique is necessary to improve the results obtained through interviews.

Key words: Investigative Interviewing, Conversation Management, P.E.A.C.E, Feminicide

Introduction

Criminal investigation in Mexico is performed by the investigation triad, which involves the police, experts in different areas such as medicine, and prosecutors. They all use interview or interrogation techniques to do their work. Unfortunately, in Mexico, most cases are unsolved due to various causes, among them, stand out corruption, lack of financial resources and the use of obsolete investigative techniques, for example using witchcraft to solve investigations (Olmos, 2012). This eventually results in the liberty of guilty subjects. This article illustrates a way of conducting investigation through investigative interviewing using the Conversation Management (CM) approach, which has been examined in research studies, and is one of the more effective methodologies to obtain useful information from reluctant witness or suspects, and thus is expected to be used in the investigation of feminicides.

Feminicide or femicide, a hate crime

Feminicide is an aggravated homicide due to gender reasons. This conduct is lawfully punished in Latin America (LATAM), the Caribbean and Spain. In 2018 there were at least 3,287 feminicides in 15 countries of LATAM, including Mexico, which as 898 cases (ECLAC, 2018).

According to Mexico Federal Penal Code, article 325, a person commits feminicide who deprives a woman of living for gender reasons. Those reasons occur in the following circumstances:

1. Victims show signs of sexual violence of any kind.

2. Victims have been injured or mutilated before or after the deprivation of life, or suffer degrading acts has necrophilia.

3. When there is a history of any type of violence inside the family, work or school environment between the victim and the murderer.

4. There has been a previous relationship (love, emotional or trusty) between the victim and the murderer.

5. Existing data about threats related to the criminal act, harassment, or injury before the murderer.

6. The victim was uncommunicated before the deprivation of life.

7. Victim's body was exposed in a public place.

According to the above, there are no unintentional feminicides. All cases are painful and therefore are intentionally caused by motivation based on gender. It can be committed by men or women when gender reasons are involved. People who commit feminicide typically have a lifestyle involving gender violence - they usually have family records of violence motivated by gender as illustrated by the following examples acquired from a woman who suffers violence at home or any other place:

– My uncle kissed me on the mouth, I accused him, and they said: do not overdo it.

– I talked about my grandfather's abuse, I was ordered to shut up or I would destroy the family.

– When my mom got sick, I had to quit my job to take care of her, because my brothers did not have time.

Investigation of feminicide

Feminicide investigation should not solely be limited to the crime scene, but also involve the circumstances and social environment that triggered the criminal conduct. That is, when planning an investigation, it is necessary to gather information from three fundamental areas: 1) life history and social environment, 2) the personality profiles of the victim and the victimizer, and 3) the resulting criminal conduct elements, that is, evidence founded in the crime scene. In this article we will focus

on evidence and how can be used within Investigative Interviewing using the CM approach to carry out investigations.

Crime investigation is performed by different techniques such as interviewing and interrogation, physical and electronic surveillance, auditory, forensic science, undercover operations, and other methods (Knoke & De Lise, 2010). Interviewing and interrogation stand out because they are accessible, economic, simple, and effective to obtaining information from witnesses, suspects, or victims, all of whom can be cooperative or hostile (Goodman-Delahunty et al., 2014). We assume almost all suspects of feminicide are hostile, in this sense, CM is a technique to investigate feminicide without coercion, allowing case resolution respecting human rights, and avoiding evidence that is obtained illegally, also known as the fruit of the poisonous tree (Dressler et al., 1991). To apply CM to feminicide investigation, it is necessary to know the tactical use of evidence obtained from the crime scene, for example, the linking information a blood sample can give the investigator to positively identify a suspect.

Conversation Management Approach

Conversation Management (CM) technique was initially developed by Doctor Eric Shepherd in 1983 (Shepherd, 2008a). CM means that any investigator must be aware of and manage the communicative interaction between interviewee and interviewer, verbally and nonverbally (Milne & Bull, 1999). It was developed in response to Dr Shepherd's observations about unethical interviewing and interrogation processes that decades ago resulted in coercive investigative conduct and ineffective questioning by police officers in the UK. CM is mainly used for unwilling interviewees.

CM is based on the ACCESS model of investigation. An acronym for the six stages of problem-solving of any investigation. **A**ssess means that the interviewer must begin the process by reading the case file and create an action plan; **C**ollect is to gather information and evidence; **C**ollate is the systematic recording and organization of information and evidence collected from investigative actions and interviews; **E**valuate stage is where all data is analyzed regarding its legality, validity, reliability, integrity, and how can be used within the interview plan. **S**urvey means that all the information must be appreciated together to find out different hypothesis; **S**ummarize is an overview of the case, progress and recommendations for further investigation (Shepherd & Griffiths, 2013, p. 9; Davies & Beech, 2012). The analysis could

be developed by using the SE3R (survey, extract, read, review, respond) method (Ede & Shepherd, 2000), which also serves as note-taking technique (Shepherd, 2008b).

CM comprises three phases:

1. Pre-interview behaviour

This phase focuses on the ACCESS systematic cycle of investigations. At this stage, planning and preparation for the interview are crucial. Planning is the mental process of think about on how to conduct the interview, planning allows the interviewer to determine needs, goals, strategies, tactics and actions. Preparation is to do and acquire what is necessary to carry out the interview according to the plan. There are three fundamental elements to consider at this stage:

a) Research about

– Case narrative:

This is understood as the whole picture of what happened concerning the case. It introduces the interviewer to how the case was initially reported, includes patrol officers involved (first responders), suspect and evidence of the crime, who was notified and who attended to the crime scene. It must include how the case began, observations of first responders at the scene, details of initial and follow-up investigative actions, findings, given cautions, and conclusions. Besides, it must illustrate to the interviewer the possible defenses, alibis, legal adviser contact, custody officer concerning detention and custody record matters including talking with the suspect (privacy and detainee rights) (Shepherd & Griffiths, 2013, p. 365).

– Investigative material

This material could be obtained and analyzed by the use of mapping templates, we recommend the use of OHLAWTI, an acronym for; Offence (suspect knowledge of the crime under investigation, relevant case law related the crime); History (suspect background, previous incidents); Locations (suspect explanation of his presence or any material at the crime scene); Actions (suspect accounts of his actions, reactions, responses, sequences of events); Wounds (suspect explanation of the nature of injuries); Times (suspect accounts of Material Time Frame-MTF), that is to say, circumstances leading up to, during and following the crime); Identification (suspect explanation of why the witness named and describe him). Identification could be reached thorough ADVOKATE technique, which is an acronym for the

following criteria to do an identification: 1) amount of time during observation, 2) distance, 3) visibility, 4) obstruction, 5) know or seen before, 6) any reason to remember, 7) time-lapse, and 8) error or material discrepancy. Identification also explores suspect justification about material involved in the event under investigation possibly linking him to the crime scene, for example weapons, clothing, or fingerprints. Once the mapping template is done, the interviewer can group methodically their topics using the 'wheel of blobs' (WOB) route map (Shepherd & Griffiths, 2013, p. 147). WOB allows the interviewer to organize topics around the main objective of the interview, which must be explored with specific questioning for those areas. Each topic can be divided into subtopics, for example, "communication" could explore a phone call, a meeting, or emails, and then those subtopics must be probed with questioning.

– Interviewee information

This information includes personal details about the interviewee, relationships, biography, current environment (lifestyle, social support, sources of stress), the frame of reference (FOR) (feelings, attitudes, beliefs, values, prejudices, expectations), psychological and physical health including medication, current physical and mental state, key behavior (behavior when interacting at the social level or under stress), requirements for third parties (interpreter, consular representative, lawyer), likely reaction to interviewing (cooperative, hostile), criminal record or experience with police or forensic matters (Shepherd & Griffiths, 2013, p. 310).

– Crime scene related information

Time and location of the crime, how the crime came to attention, initial response arriving at the scene, safety procedures, emergency care, crime scene investigator, evidence technician, witness, interviews, expert advice and analysis of factual and circumstantial evidence, possible reason, documentation (sketching, photography, videography), evidence collection procedures.

b) Generate strategic planning and preparation

Investigative interview planning

Proper interview planning and research about the best way to conduct an interview are certainly useful, however, an interviewer must plan to be open and flexible to be able to process new and unexpected information if it arises. Basically, before interviewing, the following elements must be considering:

– Timing

According to the circumstances, when is the best time to carry out the interview? for example, if the interviewee is in custody or intoxicated, decisions must be taken.

– Location

Must provide audio and video recording, security, privacy among other characteristics.

– Duration

Cognitive resources must be considering.

– People present

Lead interviewer, second interviewer, interpreter, lawyer.

– Post-interview actions

What if new evidence arises? What if the suspect remains in silence?

Case related planning

To plan and prepare the challenge phase, interviewers should ask about:

– Legal aspects

What should need to prove it? How the evidence was obtained? Does the suspect receive cautions? What if the suspect remains in silence? Probable defenses, mental state of suspects, intoxications, age of probable suspects.

– Investigative Important Information (I3) (Interviewer's agenda, police agenda, interviewer's area)

Important topics for the interviewer, what specific information is needed from those topics, for example, details that can be used to clarify the suspect account. This information can be divided into four categories which also serve as a standardized note-taking technique: People, Locations, Actions and Times (PLAT) (Shepherd & Griffiths, 2013, p. 26).

– Tactical aspects

How information/evidence is going to be introduced? How can be used the information/evidence in the challenge stage? When is the best time to reveal information/evidence? Should it be revealed gradually or all at one time? (Dando & Bull, 2011; Bull, 2014; Dando et al., 2015).

Preparation must include:

– Physically self-preparation (leader or second interviewer)

Interviewers should not smoke or drink excessively days before the interview, preferably should sleep at least seven hours to enjoy mental agility according to the circadian cycle and the release of hormones (Boyce & Barriball, 2010) necessary for good physical and mental performance, equally, should eat something at least two hours before the interview allows the interviewer to develop and maintain glucose levels for improving cognitive performance, a phenomenon known as the 'glucose facilitation effect' (Peters et al., 2020).

– Mental preparations

The success of a criminal investigation mainly depends on the correct decision-making of the investigator (Fahsing & Ask, 2013). Gollwitzer (1990) suggests that much human decision-making and consequently behaviour is 'goal-directed'. That is, humans make decisions with specific goals in mind and there is little doubt that criminal investigators are any less human in this respect. Decision making in feminicide investigations can be affected by cognitive bias such as 'tunnel vision', Halo and Horn Effect (McLean & Roach, 2011; Gierlasinski & Nixon, 2014), or confirmation bias which is the tendency to seek out confirmation of our preconceived beliefs. For example, when an interviewer forms a distinct opinion about a suspect based on a piece of information such as the previous contact with police (Rossmo, 2009; Roach & Pease, 2013). Interviewers must ask themselves, if they are aware of biases (investigator mind setting)? If those biases can be managed? if they are at the right state (emotion/stress/health/tiredness/preoccupations) to engage in an interview process.

– Case preparations

Before the interview, interviewers must have knowledge of case details as shown in case planning or first phase of the CM. The WANTS Analysis is useful at this stage to assist the investigative action preparation. This tool enables the investigator to collect and organize information that requires investigative action (what I need), allows to think about why that information is wanted or needed (why I wanted), and how it is going to be acquired (actions), also assigns priority to actions (must do, should do, could do) and record when those actions are completed (Shepherd & Griffiths, 2013, p. 134).

– Interviewing materials

Route maps examples, mental maps, SE3R format sheet (helps with the note-taking survey, extract, read, review, respond), OHLAWTI map, statements, visual representations, WANTS analysis sheet, genograms, grids (matrix), blank sheets, pen, pencil, audio and video recording equipment in the case interview room is not equipped with those elements.

– Location materials

Desks, chairs, lighting, air, tissues, water, access to bathrooms, security (real-time monitoring), first aid kit.

c) Interview "lead-in"

If the suspect is in custody, before contacting him or her, it is important to observe baselines to identify changes in the interviewees' pattern of non-verbal and verbal behavior. Changes could be indicative of psychological and physiological anxiety, for example, biting nails (Morley, 2000) – but not necessarily of lies/truths. Deliver welfares as the need for water or bathroom must be done at this stage before engaging and explain begins.

2. Interview

An Interview can be defined as questioning someone to get information. Investigative interviews are conducted to elicit information from persons during a process of an investigation. This style encourages suspects to talk using an information-gathering style that seeks to establish rapport with interviewees and uses open-ended questions to elicit information (Milne & Bull, 1999; Vrij et al., 2014). This approach does not presume guilt and uses some principles such as

allowing the suspect to freely offer his or her account and presenting evidence in a strategic manner (Meissner et al., 2014). Technically, an investigative interview is a non-accusatory, fact-gathering conversation to determine facts, sequences of events, alibis, or to confirm information with a specific interviewee following an interview framework (Snook et al., 2015). The best known are the PEACE Model (Bull & Rachlew, 2019) and the Achieving Best Evidence (ABE) Model that was also developed in the UK (Clarke & Milne, 2001; National Policing Improvements Agency, 2009). ABE is mainly used with vulnerable and intimidated witnesses. PEACE is useful for interviewing witnesses, victims, and suspects. It is an approach involving the acronym: 1) planning and preparation, 2) engage and explain, 3) account, clarify and challenge, 4) closure and 5) evaluation of interview procedure. When interviewing a suspect as in a feminicide investigation, CM technique is often used within the account phase structure of the PEACE model, and consists of four sub-phases know as (GEMAC), which is an acronym for greeting, explanation, mutual activity and closing as described below:

a) Greeting: interviewer introduction and rapport

The interviewer must introduce himself/herself by name, equally, identifying any other person present, for example, a second interviewer. Also explain suspect rights, including legal advice according to local laws. It is important to be sure that the interviewee understands what the interviewer is saying by asking them to repeat and explain legal cautions. As well, the interviewer must let know the suspect about his or her needs such as use the bathroom or drinking water. All the above must be this said in a clear, comprehensible, open, and respectful manner because is important to establishing rapport (Boyle & Vullierme, 2018).

Establishing rapport (Bull & Baker, 2020) means "establishing communication with someone". In a social conversation where the participants know well each other, the rapport is likely to exist or to be established quickly, as a result, an uninhibited conversation flows from the beginning. Investigative interviews present different situations. Frequently, participants meet for the first time and the relationship between interviewer and interviewee can be artificial and uncomfortable. Suspects, witnesses, and victims are unaccustomed to dealing with police, so they may feel nervous, anxious and vulnerable. A good conversation is unlikely to develop in such an environment, then interviewers must establish rapport as soon as possible so information will flow better between the parties (Walsh & Bull, 2012). It is the responsibility of the interviewer to create a satisfactory working relationship from the beginning. A good relationship will help maximize opportunities

to obtain reliable and objective information. There are many known strategies to establish rapport, as the use of the "Devil's advocate" (Pérez-Campos Mayoral & Langer, 2019), or using attentive behavior, imitative behavior, courteous behavior, common grounding behavior (Gremler & Gwinner, 2008). Correspondingly, the behavior that results from individual interactions such as treating the interviewee with respect, giving them information and explaining entire procedures, using open-ended questions promoting full narrative without interruptions, and allowing them to perceive themselves to be the experts also favour the establishment of rapport (Fisher, 2010). Similarly, interviewers can construct a positive relationship through RESPONSE behaviors, which is "everything an interviewer says or does, and the way he or she says and does it constitutes the interviewer's response to the interviewee as a person" (Shepherd & Griffiths, 2013, p. 19). RESPONSE is an acronym for Respect, Empathy, Supportiveness, Positiveness, Openness, Nonjudgmental attitude, Straight-forward talk, Equal talking across each other. This should be displayed by verbal and nonverbal language.

b) Explanation

Once introductory matters have been completed and rapport built, goals and objectives of the interview are developed, that must include the following four elements (Shepherd & Griffiths, 2013, p. 22); 1) the reason for the interview for most suspects may be to allow them the opportunity to give their side of the story. To do this, they must be aware of what they are being accused. This does not mean that the interviewer must tell about all the existing evidence against him or her, but enough to allow the interviewee to give an answer of what happened. Victims and witnesses also require an explanation of why they are being interviewed. The reason is to obtain information related to their knowledge of the matter under investigation. Explaining the reasons for the interview allows interviewees the opportunity to ask questions regarding the entire process they are going through, this will help interviewees to decrease anxiety caused by issues that have nothing to do with the investigation, 2) route map is letting know the interviewee the topics that the interviewer wants to cover, for example: "during this interview, I will talk to you about the baseball bat found at your place", also "I may ask you about anything else which may become relevant throughout the interview to establish the facts and issues among those topics", 3) routines include explained general information about what the interviewer will be doing within interview process, for example: that some notes will be taken during the interview, 4) expectations are what to expect from each other behavior. This is the ground rules, for example: "do not omit anything even if you think it is not relevant" (College of Policing, 2020).

Explain the procedures that must be followed

For example, the guidelines for recording investigative interviews facilitate procedures to be followed in relation to suspects, victims and witnesses. When starting an interview, the interviewer should define these procedures for the interviewee.

Another important action is to take notes during the interview, even if it is being videotaped. There are many benefits of notetaking. Notes, for example, can be useful as a reference in relation to material that is inaudible or not heard in the audio-video recording. It is important to explain the purpose of taking notes; that is, explain the interviewee that notes will help the interviewer to remember what was said. As in the interview process, the interviewees may also be curious about the reason for a written statement. The interviewer should explain that the purpose is to record evidence so that informed decisions can be made regarding what is appropriate to do with the available evidence. This is a good moment to remind the interviewee (suspect) of their rights to a lawyer, to remain silence, consular representative, etc.

A positive relationship between interviewers and interviewees will be increased when the interviewee has a full understanding of the procedures to be followed. Once the interviewees understand and accept that there are good reasons for these routines, they are likely to provide better quality information.

Describe the format of the interview

The structure of the interview should be explained and an overview of the allegation or the nature of the matter under investigation should be given. Once done, the interviewer will invite the interviewee to give their version of the history in their own words, then, the interviewer will seek to clarify the testimony with questioning. After that, the interviewee will be asked again to provide additional information that was not well explained or not adequately covered. Lastly, the interviewer will summarize what has been said at regular periods to check the correct interpretation.

c) Mutual activity

This sub-phase allows obtaining the narrative and subsequent questioning in three stages.

- **Stage one: the interviewee's agenda (account, clarify and challenge phase on PEACE model)**

This stage "is an opportunity for the suspect to say what he or she wants to, or to raise issues to that he or she wishes to cover" (Schollum, 2005). This stage could occur during the "account" phase of the PEACE model. Walters (2002) divides this stage into two sub-stages. The narration subphase, where the suspect does most of the talking, and the cross-examination subphase, where the interviewer asks specific questions about the narrative. To obtain a good narrative, it is recommended that the interviewer promotes active listening through signs of sincerity, open posture, forward lean, touch, eye contact, nods and supportive sounds and silences (it SOFTENS verbal and nonverbal behaviors). For example, smiling as a sign of sincerity, maintaining an open posture keeping hands away from the mouth, leaning slightly forward showing interest in the conversation, touching the interviewee can sometimes be an appropriate way to give support, maintaining eye contact (but not staring) sends the message that the interviewer is paying attention, similar to nodding the head or saying supportive sounds as "oh-yeah" (Shepherd & Griffiths, 2013, p. 59). To begin acquiring information at this stage, open questions (TED) style must be used, for example, tell me, explain, or describe what happened (Walsh & Bull, 2015). This kind of questioning helps to generate rapport and avoids the interviewer to contaminate the narrative. Having actively listened to the first narrative, the interviewer expands and clarifies relevant issues on the interviewee's agenda through specific probing questions (5W-H): What? Why? When? Who? Where? How? (Oxburgh, Myklebust & Grant, 2010). Issues must be explored about People, Locations, Actions and Times (PLAT) to examine useful information (Alison et al., 2013). This type of questioning (funnel model) allows the interviewer to verify details of the topics explored, so the interviewee commits to their testimony, leaving no doubt as to the mode, time, place and circumstance of the event (van der Sleen, 2009). To finish this stage, the interviewer summarizes all the obtained information and links it to another topic.

- **Stage two: Investigative Important Information (I3) or interviewer's agenda (account, clarify and challenge phase on PEACE model)**

The investigator now performs the same procedure that was used for obtaining information as the one applied in the interviewee's agenda (select topic and use the interview spiral: asks open question, probes, summarizes and link (Shepherd & Griffiths, 2013, p. 226, 435), but now the questions are about the topics that the interviewee did not mention initially and that the investigator developed in the planning subphase. Some topics should be related to the case, that is, evidence (case-related preparation). Commonly, suspects feel stress when these topics arise and, therefore, they may become uncooperative or behave inappropriately (inter-

rupt, change topic, etc.), in that case, interviewers must explain how this behavior affects the conversation, how to solve the problem and lastly express the consequences (Shepherd & Griffiths, 2013, p. 111). This can be done using the DEAL technique, which is an acronym for Description (I need to point out that every time I ask you a question, you interrupt me), Explanation (this makes difficult to progress), Action required (please do not interrupt me when I am talking) and Likely consequences (if you persist with this behavior, I will have no other option than...) (Shepherd & Griffiths, 2013, p. 270).

- **Stage three: compare and contrast (account, clarify and challenge phase on PEACE model)**

The process is a review of the elements of which in a suspect interview are captured by Final Anomaly Investigation and Reasons (FAIR) (Shepherd & Griffiths, 2013, p. 26) to suspect elements in order to attract suspect's attention to things that are not clear, allows to ask again about details without impugning the suspect's character (for example, not telling him/her that she/he is lying) and involves giving the suspect the basis for suspicions. The objective of this stage is to maximize the information and highlight inconsistencies. The interviewer lets the interviewee know that inconsistencies or inaccuracies have been found between his narrative and the available information/evidence. Subsequently, a clarification is requested in this regard, this phase should be approached calmly, avoiding showing anger or threatening the suspect.

d) Closing

A review of the information must be done at this stage of the interview. This could be done by accurately summarizing topic by topic (while avoiding bias). Legal requirements must be restated as at the beginning of the process. Includes restating the right to legal advice and an explanation of what may happen after the interview.

3. Post-interview (closure and evaluation phase on PEACE model)

A positive ending must be created, aiming at mutual satisfaction regarding the content and performance of the interview process. This phase of the CM includes the closure and evaluation of the interview process. The closure refers to the good treatment that the interviewee should receive so that if a second interview is needed, the person is willing to continue cooperating. Finally, the quality assessment (quality control) applies to the entire process. Includes interviewers' review of skills to identify successes and errors (strengths and weaknesses) and verify the following proce-

dure topics: planning and preparation, interview relevant topics, cautions, supplies summaries/links, checking to understand of caution, covers points to prove, informing of legal advice, explores information received, advising of the right to tape copy, explore any inconsistencies, explains the purpose of the interview, challenging skills, routines and route map, explaining interview is opportunity to give account, rapport building, encourages suspect to give account, develops investigative topics, logical interview structure, appropriate questioning techniques, explores motive, uses pauses and silences, conversation management skills, cognitive interview skills, express self-confidence, express open mind, shows flexibility, communication skills, active listening skills (Walsh, King & Griffiths, 2017).

The PEACE Model

In 1984 the Police and Criminal Evidence Act (PACE) was enacted, which was compatible with the CM. At that time, it was an innovative and controversial attempt to regulate crime investigations (Cape & Young, 2008). This Act mandated that from 1986 all interviewees with suspects must be recorded (e.g., on audiotape). Research on the audio recorded interviews that were conducted in the late 1980s revealed mostly unskilled interviewing. Therefore, a training model was developed in 1992 by experienced police (and psychologists) that is called the PEACE method (Milne & Bull, 1999; Bull & Milne, 2004; Bull, 2018). The PEACE method incorporated the CM and they are structurally similar.

The PEACE Investigative interview model was recommended to the United Nations Organization through resolution 70/146 on torture and other inhuman, cruel, and degrading treatments or punishments (United Nations, 2016; Nowak et al., 2019). It is an approach based on the acronym: 1) planning and preparation, 2) engage and explain, 3) account, clarify and challenge (interview model to elicit information as the CM), 4) closure and 5) evaluation of the interview. The needs regarding planning and preparation are specific and non-specific (constant and inconstant) to each case, for example, what is the appropriate gender to interview a female victim of sexual violence? The answer is in the analysis of the previous information (case-related preparations). The engage and explain contemplates communication strategies, such as the importance of generating rapport with the interviewee, explain the general rules, self-introduction, explain procedures, legal rights, roles. Next phase is the application of the CM approach to elicit information; thus, the interviewer can compare and contrast the obtained information. If physical evidence does exist, the Strategic Use of Evidence Technique (SUE) can

be useful at this stage. SUE technique contrasts narrative information with physical evidence (Hartwig et al., 2014). Also see (Dando & Bull, 2011; Dando et al., 2015) for the gradual disclosure of information/evidence. In the closure phase, the interviewer must review the statement, summarize, explain what will happen next and thank the interviewee for the cooperation. Finally, the evaluation phase must consider what information was obtained, what other actions must be taken, what further enquires need to be made and evaluate the interviewer performance.

Applying CM within the PEACE framework enhances the likelihood that the interviewer will acquire detailed and truthful information.

Applying the Conversation Management Approach to a Feminicide

Case background example

Veronica had been married for six months, she had a three-month-old baby, she was a Philosophy student at the National Autonomous University of Mexico (UNAM). She was 21 years old when she was murdered in July 2019.

Juanita (Veronica's sister) received a call, informing her that Veronica was being injured by her husband (Luis Angel). Despite the fact, Juanita arrived at Veronica's place in just one hour after the notice, she found her body lying on the floor and covered with a white sheet on a dirt corner of the house. Her mother-in-law (Maria) was also there, she says that when she arrives, Veronica was already dead.

Veronica died of traumatic brain injury, although, she also had 17 stab wounds in breasts area; a weapon (knife) got stuck in left clavicle and traces of hair and skin were found in his nails. Veronica's family suspected that Luis Angel was mistreating her because she had already been hurt days before the feminicide, unfortunately, she never wanted to say anything.

Table 1 describes some of the evidence that can be founded in a feminicide investigation, also, describes how can assist an investigative interviewing using the CM.

Evidence

Evidence location	What can be found and collected on the intervention place (crime scene, victim body, suspect body) (Samples)	Probative value: Information obtained. from forensic exams (Analysis)	Physical or Circumstantial Evidence	General use	CM
Crime scene (House of the victim in this case)	Blood	1) Polymerase reaction chain-Deoxyribonucleic acid (PCR-DNA) genetics. 2) Type (ABO) System-clinical laboratory studies. 3) Toxicology (drugs) – clinical laboratory studies.	*Physical Expert testimony	1) Identification through DNA. 2) Orientate identification through blood type. 3) Physical and psychological condition of the victim.	1) Proofs contact with the victim if there is DNA correspondence. 1, 2 & 3) Allows to compare suspect statement with evidence.
	Fingerprints	1) Dactyloscopy 2) PCR-DNA-genetics.	*Physical Expert testimony	1) Identification through comparative fingerprint analysis. 2) Identification through DNA.	1) Establish that a person was in the place or had physical contact with the body or some objects. 2) Proofs contact with the victim if there is DNA correspondence.
	Hair	1) Forensic hair analysis.	*Physical Expert testimony	1) Identification through DNA by evaluating hair structure and DNA from cells attached to the root of the hair. 2) Hair analysis can also be used to check for poisoning or drug abuse.	1) Proofs contact with the victim if there is DNA correspondence. 2) Allows comparing suspect statement with evidence.
	Baseball bat cover with blood.	1) Fingerprints. 2) Blood. 3) Tissues (brain remains) 4) Hair.	*Physical Expert testimony	1) Identification through comparative fingerprint analysis. 2) Identification through DNA. 3) Identification through DNA. 4) Identification through DNA by evaluating hair structure and DNA from cells attached to the root of the hair.	1) Proofs contact with the victim if there is DNA correspondence. 1, 2, 3 & 4) Allows to compare suspect statement with evidence.

Evidence location	What can be found and collected on the intervention place (crime scene, victim body, suspect body) (Samples)	Probative value: Information obtained. from forensic exams (Analysis)	Physical or Circumstantial Evidence	General use	CM
Victims body:	Autopsy	*Medical examination of the body and belongings	*Physical Expert testimony	1) Determine the cause of death. 2) Determine the time of death. 3) Determine the injuring agent according to wounds characteristics (knife, gunshot, etc.). 4) Determine if the death was an accident or provoked.	1, 2, 3 & 4) Allows to compare suspect statement with evidence.
	Blood	Same of the crime scene.	Same of the crime scene.	Same of the crime scene.	Same of the crime scene.
	Fingerprints	Same of the crime scene.	Same of the crime scene.	Same of the crime scene.	Same of the crime scene.
	Skin under fingernails	1) PCR-DNA-genetics.	*Physical Expert testimony	1) Identification through DNA.	1) Proofs contact with the victim if there is DNA correspondence and allows to compare suspect statement with evidence.
Suspect body:	Injuries	1) Medical examination.	*Physical Expert testimony	1) Determine the injuring agent. 2) Determine types of injuries. 3) Determine the cause and mechanism of injuries production.	1) Allows reconstruction of events and to compare suspect statement with evidence.
	Blood	Same of the crime scene.	Same of the crime scene.	Same of the crime scene.	Same of the crime scene.
	Fingerprints	Same of the crime scene.	Same of the crime scene.	Same of the crime scene.	Same of the crime scene.
	Knife	1) Fingerprints. 2)Blood, 3)Tissues remain 4) Hair.	*Physical Expert testimony	1) Identification through comparative fingerprint analysis. 2) Identification through DNA. 3) Identification through DNA. 4) Identification through DNA by evaluating hair structure and DNA from cells attached to the root of the hair.	1) Proofs contact with the victim if there is DNA correspondence. 1, 2, 3 & 4) Allows to compare suspect statement with evidence.

Evidence location	What can be found and collected on the intervention place (crime scene, victim body, suspect body) (Samples)	Probative value: Information obtained. from forensic exams (Analysis)	Physical or Circumstantial Evidence	General use	CM
Suspect belongings	Clothes (clothes are analyzed in the autopsy process)	1) Blood. 2) Hair.	*Physical Expert testimony	1) Identification through DNA. 2) Identification through DNA by evaluating hair structure and DNA from cells attached to the root of the hair.	1) Proofs contact with the victim if there is DNA correspondence. 1 & 2) Allows to compare suspect statement with evidence.
	Cell phone analysis	1) Call records details (contact name, number, time, call duration). 2) Topographical locations (Mapping).	*Physical Expert testimony	1) Probable identification of persons according to call record details. 2) Identification of whereabouts according to cell phone radio signal.	1) Allows comparing suspect statement with evidence.
Suspect interview	Alibi/ Narrative	1) People 2) Locations 3) Actions 4) Times	Circumstantial evidence	1) Identification of witness. 2) Identification of places where the suspect was at the time of the murder. 3) What was he doing when the crime occurs. 4) Where was he at the time crime happens.	1, 2, 3 & 4) Allows to compare suspect statement with evidence.

Table 1. Evidence utility in an investigative interviewing using the CM

Interview with the suspect

Above is a brief example of how to use the CM in an feminicide investigation context:

1) Interviewee agenda:

Open question by the Interviewer: Tell me everything you did the day your wife was found dead at your place?

Interviewee answer: I get up at five in the morning. I always get up at that time because it takes me an hour to arrive at the office. It is a very complicated route since you must wait at the bus stop more than ten minutes, once you get to the office area, must walk a couple of blocks from bus drop at office. That day I went out a little late,

I remember because there was no hot water at home, and I had to warm up a little bit before entering the shower. Before leaving, I said goodbye to my son and my wife. I remember arriving at the office at 6:55 am, I was on time. At the main entrance of the office building, I met a coworker, we greeted each other, and he asked me about my hand because was red and inflamed. I said I had an accident on the bus because was fully, and when the back-door closes, my hand stayed pressed. After that short conversation, I went to my office and worked there until Maria, who is my mother, called me and asked me to return home because something had happened. At that moment, I ran back home and when arrived, there was my mother and Juanita, who is my sister-in-law. They told me to sit down because I had to know something, then my mother told me that my wife was found dead.

Probing question by the interviewer: in this example, we are going to use the spiral question technique (Shepherd & Griffiths, 2013, p. 226, 435) to obtain more information about the "coworker" as a topic to expand and clarify. For example, who is the coworker you talk with about? What did he tell you exactly? What is his name? After probing questions, summarizing by the interviewer must be done.

2) Interviewers I3:

In this example, we will focus on a topic that the interviewee did not mention in his initial narrative. A spiral questioning about baseball bat located at the crime scene must be done. According to forensic studies, the bat analysis could provide fingerprints information and DNA identification through the analysis of tissues and organs (hair and blood).

Interviewer: Tell me, all you can remember about the baseball bat located at your home?

Interviewee: We do not have a baseball bat at home.

Interviewer: Is there any reason a baseball bat could arrive at your home?

Interviewee: No way, no one in the family likes baseball, the suspect who attack my wife must bring it with him.

Interviewer: In the last ten days, have you had physical contact with a baseball bat?

Interviewee: No

Summarizing

3) CM challenge phase:

At this phase, interviewers challenge suspect account using inconsistencies and inaccuracies identified from the information provided by the suspect, witness, and evidence. The challenge should be delivered in a calm and controlled manner. Must be presented in a matter of fact way that merely asks the suspect to account for the evident disparity in their account against the information from another source (Green et al., 2008; Roberts & Herrington, 2019). For example:

Interviewer: You previously said that you have never touched a baseball bat, but we find your fingerprints on the baseball bat founded in your house, Can you explain that?

Interviewee: someone must have put my fingerprints on the baseball bat (plausibility).

Closing comment

In Mexico, the triad of investigation needs to adopt modern, research-based interview procedures and other science-based technologies that are appropriate to obtaining of trusty information. This work aims to enlighten the reader of the need to use valid paradigms and evolve as modern societies. The PEACE Model (and its CM components) has been recommended to the United Nations for being effective while being respectful of fundamental rights, which allows the systematic acquisition of detailed information useful in diverse contexts, like criminal investigation on feminicide.

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The Offender Recognizes the Victim –
About the Advantages of Using the Visual Version
of Polygraph Test in Serious Criminal Case

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Abstract

The authors of this article consider the advantages of using a visual version of CIT during polygraph examinations. The presentation of the rarely used CIT encourages to discussion about the possibility of implementation such tests in serious criminal cases. Their application takes a form similar to the police lineup. However, the main difference is that the suspect reviews photographs of possible crime victim. In the described case we are dealing with a so-called "reverse police lineup". As the result, the visual CIT proved that the examinee knew the victim of the crime, despite the fact that he had previously denied this. Thanks to the examinee's arousal recorded on the key question, it was also possible to obtain the desired psychological effect in the form of the perpetrator's confession and the indication of other evidence proving his guilt.

Key words: polygraph examination, Concealed Information Tests, police lineup, detective value

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Introduction

Many lawyers and criminal proceedings specialists, in particular, oversimplify the potential applications of polygraph examination results by law enforcement agencies (Herbowski, 2011). After all, not every forensic expertise aims to produce evidence that can be used to establish guilt in legal procedures. Such an approach may be due to the frequent underestimation of the existence of the most difficult phase of criminal proceedings, i.e. *the in rem phase*. In the case of polygraph examination, it is most expedient to conduct it and use its results at the first stage of police investigative work. J. Konieczny shared a similar viewpoint, believing that the polygraph might be an excellent tool for gathering important detective information but far less commonly for evidentiary purposes (Konieczny, 1988).

There are also fewer requirements for polygraph examinations conducted at this stage of the proceedings (Krzyścin, 1996). Their results allow for the immediate exclusion of the examinee from the list of suspects or the confirmation of one's involvement in a crime, therefore their results are largely of investigative use. However, a positive result for the examined person (Deception Indicated), must be verified by other evidence. Even a potential but unlikely error won't have any detrimental procedural repercussions for the person undergoing the examination. Thus, the doubts of criminal proceedings specialists, concerning the methodology of polygraph examination, are taken into account (Jaworski, 2005).

An extremely important benefit in terms of the interest of the criminal proceedings, which polygraph examination can bring in the *in rem phases,* is the confession due to its psychological impact. Confronted with the test results the actual perpetrator can confess to commit the crime and indicate the evidence proving one's guilt.

The use of polygraph examinations offers also possibility to conceal the true sources of police information which can be introduced indirectly into the criminal trial. After all, it might be challenging to keep police informants safe while still using the data they provide in legal procedures (Herbowski, 2018). Therefore, the provided information can be used to create questions in polygraph tests without indicating how the police acquired knowledge of the details of the crime.

We may face such a situation when witnesses due to fear of revenge from the perpetrator or his colleagues, refuse to provide useful information that could contribute to a conviction of a guilty person. In order not to lose this information in a criminal trial, the data can be used in a polygraph examination, for example, to build Con-

cealed Information Tests. It can allow to indicate the perpetrator's knowledge of details related to the scene of the crime (Jaworski, 2000).

Case study

An example of such application of polygraph examinations can be the case that occurred in a major Polish city. Unknown perpetrators beat Paul S., who died three days later in his apartment. He was the perpetrator of many thefts in the past.

In the initial phase of the investigation, the police had a few crime details from a friend of Paul S, who was present at the beating. However, he covered up his failure to remember the circumstances of the incident due to the alcohol consumption together with Paul S that day. He could not even give the exact number of offenders. He remembered the moment when the perpetrators began their conversation with Paul S.

In addition, police obtained important information that three day before Paul S's death, an unknown man asked about him at a local shop in the afternoon. He had been seen occasionally consuming alcohol at a nearby pub and playing soccer every Sunday. Has was identified as Artur G.

During the police interviewing Artur G. denied knowing or having any contact with Paul S. He claimed that had never asked about him at the local shop. He also did not know who might be involved in Paul's beating. Police officers found out that on Sunday, when the fatal beating occurred, Artur G. with his friends was coming back home from a soccer match. Marek Z. was among them. After police checks in police databases, it turned out that six months earlier Marek Z. reported the police the theft committed against him by the victim of the beating, i.e. Paul S. That investigation was discontinued for lack of evidence.

Both Artur G. and Marek Z. insisted that, after they had returning from the game, they were at home when Paul S. was beaten. Their families confirmed their testimonies providing them with an alibi. The police tried to verify this information with checks of their phone logins in base stations. However, this work did not contribute in any way to clarifying the case.

So, it seemed that the case of the fatal beating would never be resolved. The investigators did not have the ability to collect other evidence to confirm the involvement of Artur G. and Mark Z. in this crime. It was due to the fact that the first investi-

gative steps were taken a few days after Paul S.'s death, when his brother discovered victim's body in his home. During the investigation police didn't collect any forensic traces that could be used to identify the perpetrators, as well as security camera footage (CCTV). There were no witnesses to the crime that could identify the perpetrators.

Due to these numerous difficulties, it was decided to run polygraph tests to verify the testimony of the men. Arthur G. agreed to undergo the polygraph test which was conducted one month after Paul S.'s death.

Course of the examination

The polygraph examination, in accordance with the current methodology, consisted of the following phases.

1. Pre-test interview;

2. An acquaintance test with number;

3. Diagnostic tests regarding the beating of the victim.

The circumstances of this crime allowed to use two kind of tests: recognition tests (the Concealed Information Test, the Know Solution Peak of Tension, the Searching Peak of Tension) and deception tests (the Comparison Question Technique). This is an example of a rare situation because the first kind of tests are typically not employed in forensic polygraph examinations. The reason for this situation is that many crime's details are revealed in the media and cannot be used to build recognition tests.

In this examination two recognition tests (CIT and SPOT) were carried out after the acquaintance test. Usually they are used complementary to the CQT and have been widely described in the Polish literature (Jaworski, 1999; Konieczny, 2009; Widacki, 2011; Wójcikiewicz, 2012, etc.). According to the guidelines, they should be presented as the first to avoid possibility of revealing the useful crime details during the presentation of the relevant questions in CQTs. Krapohl et al. (2009) wrote that the CIT can provide additional support for the decision based on the CQT and they can be an effective tool in the interrogation.

The Concealed Information Tests allow to distinguish between those who know the circumstances of a certain crime although they deny it and those who do not have such knowledge. Key question, which is a circumstance of the event (like the

sum of stolen money, a kind of weapon) is presented among the set of unrelated stimuli. A crime detail is the relevant stimuli and the others are its background.

It is assumed that a person who denies involvement in the incident will recognize and respond to the relevant stimuli (CIT-effect) of the CITs. In preparation to conduct examinations polygraph examiners read the case files, analyze crime scene evidences and other crime details to identify items which are the most likely to be remembered and important to the offender. For those who have nothing to do with a case under investigation, all the stimuli presented in the CIT should be equally indifferent (Krapohl et al., 2009). The accuracy of the CIT is at a level of about 82% (Gougler et al., 2011). It belongs to techniques with a well-established theoretical basis according to which a person focuses his/her attention on significant stimulus, but not indifferent (Selle & Ben-Shakhar, 2023). Moreover, studies conducted by klein Selle suggest that two empirically established mechanisms underlie the CIT-effect: orienting and arousal inhibition. These tests show a very high accuracy in indicating non-offenders, but lower accuracy in detecting offenders (Jaworski, 1999).

The CIT was administered in this examination using its visual format. The test stimuli were presented in the form of photographs, including an image of Paul S. before the beating. Thus, the test was similar in form to a police lineup, in which pictures or people are shown to a witness in sequence (Wójcikiewicz, 2009). The main difference in a polygraph examination is that an image of the victim – Paul S. with other photo of unrelated men were shown to the person suspected of this crime. This test therefore resembles a "reverse police lineup" approach.

In pretest phase examinee Artur G. stated that he had never seen the victim and didn't know what he looked like. It was therefore reasonable to assume that if he is innocent, he should not recognize Paul on the photo as well should not respond on the key element in the test.

The CIT consisted of photographs of six men with the key element – the photo of the victim of the beating on the in third position. In order to ensure objectivity, the CIT must be conducted fairly to be valid and admissible in court. This includes loading the test stimuli with the photos of people who look very similar to the victim (similar age, height, carcass, clothing and other characteristics) – accordance with the Polish law regulations for the police lineup of persons (cf. paragraph 5 para. 1 of the Ordinance of the Minister of Justice of June 2, 2003 on the technical conditions for carrying out the police lineup).

Prior to the data collection process all CIT stimuli were reviewed with examinee to verifying that the key element was selected properly. Arthur G. denied recognizing anyone in the photos. The photos were presented sequentially along with the CIT questions: Is Paul S. at the photo no 3? Is Paul A at the photo no 4? etc. Examinee answered "I don't know" to all presented photos of men.

The polygraph literature mentions about the possibility of presenting the victim photos during the CIT to detect memory traces what might help to connect suspects to a certain crime. The practical application of this variant of CIT, meanwhile, hasn't been demonstrated in many forensic cases so far.
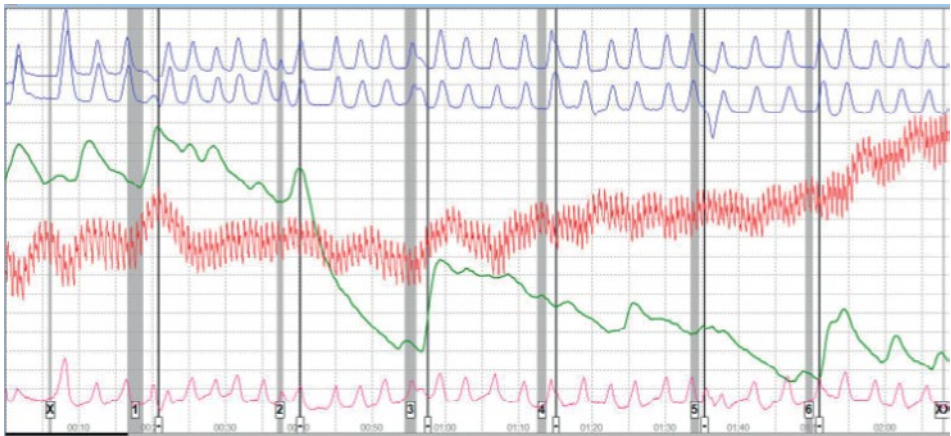

Figure 1. The CIT chart. During the CIT the examinee showed the highest response to the photo of Paul S placed in the third position

In the CIT the examinee had the greatest response to the stimulus presented in the third position in which the highest amplitude of electrodermal response occurred. An increase of the CA response baseline in the cardiovascular channel is also observed (i.e. an increase in blood pressure). According to the Lykken method, CITs are scored based on the response in the electrodermal activity channel. If the highest amplitude response occurs to a key stimulus, score is +2 points. The recorded examinee's arousal on the key element supports a different version than Artur G presented. Based on the CIT chart analysis, it was assumed that the examinee recognized the image of the victim Paul S.

Another format of recognition test was the Searching Peak of Tension where the key element is unknown. SPOT should be developed in advance of the examination in order to identify the information the investigator believes is most crucial

to resolving the case. SPOTs are used to locate evidence or identify accomplices. The American Polygraph Association classify this test as auxiliary (screening) tests, lacking evidential value

The searching peak of tension (SPOT) presented the names of people who might be connected with the beating of Paul S. They were selected on the basis of information about the social contacts of Artur G. These men were attending the football game on Sunday when the crime occurred. The SPOT construction was:

1. Was Adam N involved in the beating of Paul S?

2. Was Luke Z. involved in the beating of Paul S?

3. Was Przemysław K involved in the beating of Paul S?

4. Was Marek Z. involved in the beating of Paul S?

5. Was Piotr K. involved in the beating of Paul S?

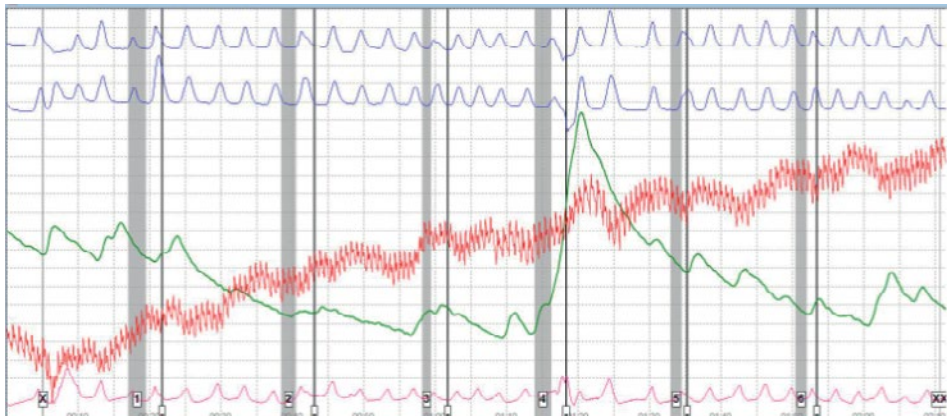6. Was Pawel A. involved in the beating of Paul S?

Figure 2. The SPOT Chart. During the test the examinee showed highest response to the name of Mark Z, which was presented at the fourth position

During the presentation of six names in the SPOT, Artur G. showed the arousal to the stimulus in the fourth position – the name of Mark Z. The highest reaction occurred in the electrodermal activity channel. As it mentioned before this type of SPOT has only an oriented value for police work. Therefore, no evidence value is attributed to it.

As the next test format, the UTAH Probable Lie Test (Utah PLT) was used. According to the methodology of CQT, the questions set is repeated a minimum of three times (Handler & Nelson, 2008). The basis of the CQT test, according to the concept of Relevant Issue Gravity (RIG), is that the attention of the offender focuses on critical questions, while the unrelated person focuses on control questions (Ginton, 2021).

The Utah PLT test consists of relevant questions (3), comparison questions (3), neutral questions (3) the sacrifice relevant question and an introductory question (Konieczny, 2009).

All questions in the Utah test, in accordance with the methodology, were discussed with examinee during the pretest interview before the test run. During this introduction, the polygraph examiner's primary responsibility, according to the RIG idea, is to draw attention to the comparison questions of the truthful examinees without affecting the salience of the relevant questions to the offender.

In this case the following set of Utah PLT questions was used:

1 Int. Do you understand that I will only ask you the questions we discussed?

2 SR Regarding the beating of Paul S., do you intend to answer all the test questions truthfully?

3 N Is it now June?

4 C Have you ever used violence against another person?

5 R Were you the one who beat up the man on June 10?

6 N Is it now Tuesday?

7 C Have you ever injured another person?

8 R Did you ask about this man at the local shop on June 10?

9 N Is it now 2018?

10 C Have you ever acted aggressively toward another person?

11 R Did you cause the injury of this man body on June 10?

The relevant questions of the test were answered „NO" by examinee.
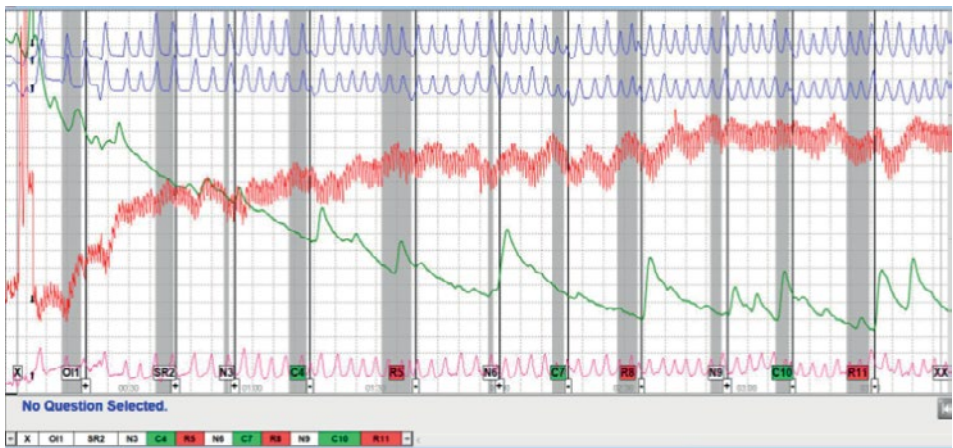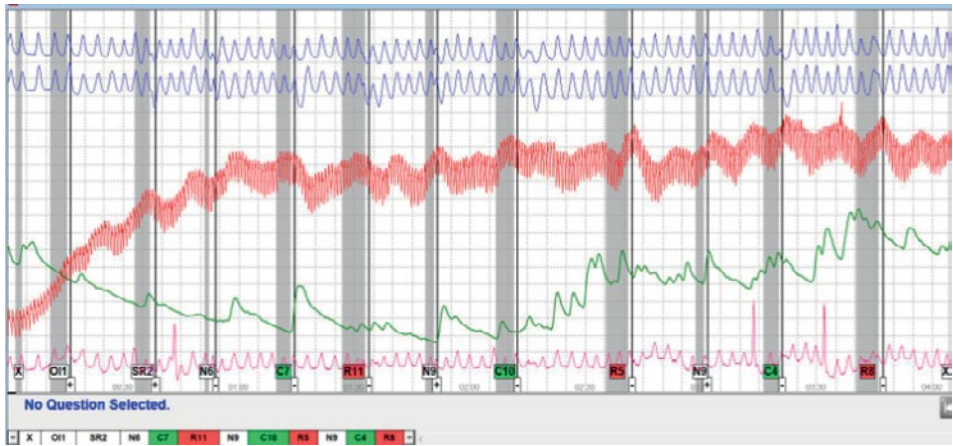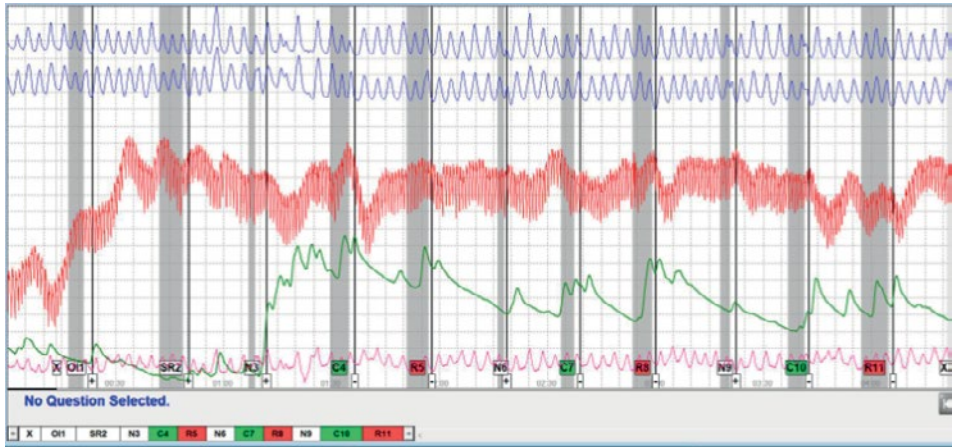
Figures 3, 4 and 5. UTAH PLT Charts. The Grand Total score according to Empirical Scoring System is -10

Utah PLT test chart were evaluated in the three stages:

1) the global assessment – the quality of the recorded charts was examined to exclude the artifacts,

2) the numerical evaluation – according to Empirical Scoring System the Grand Total score was -10 what means that the final outcome is Deception Indicated.

3) the computer algorithm with proven accuracy (OSS-3).

The Utah PLT charts indicated the significant responses of examinee to questions R5, R8 and R11. Once scoring was completed, the scores was used to form a final opinion. According to the ESS's decision rules when the Grand Total is – 10, this score justified a call for the positive outcome.

The CQT format used in this case is a multi-facet test as its relevant questions relate to different aspects of one crime (the beating of victim and asking about him before the incident on June 10). When the relevant questions relate to a single issue like the beating, the test would be a single-issue test. Both formats have the same level of accuracy when they are scored using the Grand Total Rule.

Even though the R8 caused greater responses than other RQs, it is not reasonable to draw any conclusions about the meaning of the data from it (e.g. about the role of examinee in the crime). Nelson et al. proved that the multi-facet hypothesis is false. All published study on the multi-facet hypothesis has shown that when this test is treated as a multi-issue test its accuracy decreases (Nelson et al., 2021). The reason for this is that the questions are not independent (different verbs do not make them independent). Independent questions must have absolutely no shared source of variation so that anything that causes a response to one of the RQs can have no possible effect on the other RQs. To sum up, when analysing the test data, multi-facet exams are actually single-issue exams.

Attention should also be paid to the fact that results of the Utah PLT charts concurred the findings from the visual CIT administrated as the first test. The outcome of a single CIT cannot serve as the basis for a diagnosis, but it also cannot be disregarded because doing so could result in the loss of information that would be helpful to the police. It can be assumed that the showing of the victim's photo in the first CIT and the examinee's recognition of it contributed to higher likelihood of correct diagnosis in the Utah PLT.

The polygraph examiner in the forensic opinion stated:

The version given by Artur G, according to which he has no link to the matter under investigation (the beating of Paul S.), cannot be confirmed by analysis of the examinee's psychophysiological reactions during the polygraph tests.

It is important to note how the final conclusion was written since the examiner did not use the words "the examinee is lying" or "deception is indicated" because the emotional arousal was not caused by lying activity itself but by the significance of test stimuli. (Widacki, 1982). Many studies demonstrated that polygraph tests work even in a silent condition (when examinees are not required to answer the test questions).

Immediately after the polygraph examination had been finished, the examiner provided test results to the investigators. This valuable information, especially the examinee's response to the photo of victim, allowed them to break the impasse in the investigation. During the interrogation Artur G. admitted his participation in the beating and indicated the other perpetrators, including Mark Z. As the motive of the crime, he indicated Mark Z.'s desire for revenge against the victim Paul S. for the theft he had committed six months earlier. He also described the course of the crime.

Summary

The polygraph examination presented above proved its investigative rather than evidence value. The additional purpose of this examination was to cause a psychological effect which was crucial in this case due to the lack of other means of evidence,

 Indicating Artur G. the positive outcome of his examination affected his attitude and caused the change of his tactics during next interrogations. He confessed and described the course of the crime, what contributed to obtaining valuable evidence. This was possible thanks to the CIT, which demonstrated that offender might know the victim and recognized Paul S. at the one of the photos, even that he had denied this previously.

Thus, it is justified to assume that in this case we were dealing with a "reversed police lineup" – it was the perpetrator who "recognized" the victim.

This investigation is interesting especially because, in the absence of crime witnesses and any other forensic traces that could be used to identify the offenders,

the police investigators decided to run polygraph examination. The examiner, besides the CQT, used the extremely rare visual version of CIT and the searching POT. The visual test consisted of a set of photographs, including the victim's photo and the searching test presented the names of people who may have been involved in the crime.

The outcome of the polygraph examination allowed to verify the police investigative version and to indicate the perpetrator of the victim's beating. The most important result was that police obtained evidences which indicated all five perpetrators of this serious crime and prove their guilt. The court used this evidence to apply the temporary arrest of the all offenders.

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Book review

L.D. Udalovoya, S.S. Tsherniavskiy, D.O. Alekseieva-Protsyuk (eds.): *Poligrafologia: osnovni terminy i ponyatya* [Л.Д. Удалова, С.С. Чернявський, Д.О. Алєксєєва-Процюк (ред.), *Поліграфологія: основні терміни і поняття*] (*Polygraphology: Basic Terms and Notions*) Natsyonalna Akademiya Vnutrennych Sprav – Kolegiya Poligrafologov Ukraiiny, Kyiv 2022

In the midst of a gory defensive war, the Association of Ukrainian Polygraph Examiners (Kolegium Poligrafologov Ukrany) uninterruptedly publishes books and academic journals. Their activities persevered even when Kyiv was bombed and the Russian armies approached the city, leading to the evacuation of most foreign em-

bassies and institutions to the West. New volumes were published in the spring of 2022 (…), which we noted with surprise and admiration. The courage, dedication, and sense of duty demonstrated by our Ukrainian colleagues deserve the highest recognition. There is no doubt that polygraph examinations are invaluable in the work of Ukraine's intelligence and counterintelligence during the war, as they help to combat espionage and sabotage, and to protect military secrets.

Several new books on polygraph examinations have been published in Ukraine recently, despite the raging war. One of these is *Polygraphology: Basic Terms and Notions*, published jointly with the National Academy of the Ministry of Internal Affairs. It is a concise glossary, only 46 pages long, which organises the terminology associated with polygraph examinations. The glossary is a collective work of thirteen authors, and was edited by Larisa Davidivna Udalova, Sergei Sergeevich Tsherniavskiy, and Diana Alieksieieva - Protsiuk.

The authors of the dictionary represent various fields of expertise, including lawyers, psychologists, and experts in polygraph examinations. They are both academics and practitioners, with some being representatives of the prosecution, military, and police.

The glossary organises and unifies the terminology by naming and defining concepts related to polygraph examination techniques.

It is worth noting that Ukraine has remained in close touch with Western polygraph examiners, particularly from the United States, and makes use of American equipment, especially Axciton and Lafayette, and has adopted American examination techniques. For that reason, the table bringing together English and Ukrainian terms (pp. 40–43) is particularly valuable. The publication is presented in excellent graphic form, enhancing its overall quality.

V. Shapovalov, D. Alieksieieva-Protsiuk, D. Zubovskyi, O. Alieksieiev (2020). *Технологія застосування POT, RI, CIT в поліграфологічних дослідженнях (Tekhnolohiya zastosuvannya POT, RI, CIT v polihrafolohichnykh doslidzhennyakh,* literally: *The Technique of using RI, POT, and CIT methods in Polygraph Examinations).* **Kyiv: National Academy of Internal Affairs**

The starting point for the methodical recommendations is the description of the origin and application of the RI, POT, and CIT methods, the oldest in the history of polygraphy, accompanied by detailed information on the algorithm of the pre-test interview, preparation of questions, recording of the test, and ways of processing

examination results. The advantages and disadvantages of individual methods are also considered.

The publication is based on primary sources with appropriate references, and on modern scientific research compiled by Vitalii Shapovalov, Diana Alieksieieva-Protsiuk, Dmytro Zubovskyi, and Oleksandr Alieksieiev. As the authors note, they understand well that the RI and POT formats are considered outdated, but their correct application, taking into account their capabilities and limitations, can be useful in certain cases. Moreover, the idea of preparing these methodological recommendations was related to the fact that the POT and RI formats still have many supporters in contemporary Ukraine, who, unfortunately, continue to use them as the main toolkit for conducting polygraph examinations and drawing conclusions therefrom. Moreover, these tests are often used in violation of the rules and/or in untested proprietary modified versions.

The authors hope that the methodological recommendations in the book will help to expand the polygraph experts' knowledge of the RI, POT, and CIT, while complying with the recommendations and requirements for their application will allow polygraph experts to use the entire methodological toolkit in their practice in a balanced and correct manner.

Vitalii Shapovalov

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For example (in references):

Reid, J., Inbau, F. (1966), *Truth and Deception: the Polygraph ("Lie-detector") Techniques*, Baltimore: Williams & Wilkins.

Abrams, S. (1973), Polygraph Validity and Reliability – a Review, *Journal of Forensic Sciences*, 18, 4, 313.

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