

The Significance of Polygraph Methods in Polish Investigations

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Polygraph examinations in the Polish investigative practice are based on two types of tests: the Concealed Information Test [CIT] and the Comparison Questions Test [CQT]. Much discussion about the benefits and limitations of both of them has been conducted worldwide for many years, which resulted mainly from a generally low acceptance of polygraph examination by the scientific community. This situation was also present in Poland. Therefore, the researchers focused on a thorough analysis of the scientific basis and effectiveness of both methods pointing to the differences of both methods and supported one, chosen type of test. As a result of long-term discussions, Polish polygraph examiners concluded that the CIT as well as the CQT are equally important in the forensic field and they should be treated more as complementary methods than the competitive ones; both are particularly helpful in “so called” difficult investigations. The case study described in this article shows that when both tests are used correctly, polygraph examinations may support the investigative work successfully. It can be seen especially in criminal cases where the police do not have traditional forensic evidence.

Keywords: polygraph examination, investigation, Concealed Information Test, Comparison Questions Test

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1 Introduction

Forensic science aims at the detection of deception in order to determine if a suspect is lying about his or her involvement in an illegal act committed in the past. Scientific research shows that people perform near chance (54%) when deciding what is and is not true (Bond & DePaulo, 2006). Experiments have shown that police officers, American federal law enforcement officials and judges are no more accurate than university students in detecting deceit (DePaulo & Pfeifer, 1986; Ekman & O’Sullivan, 1991). One explanation for this poor performance is that, generally, people usually have a wrong idea about what is a reliable indicator of deception (Vrij, Edward, Roberts, & Bull, 2000).

Thus, to identify deceptive behaviour, a wide range of techniques based on psychophysiological measures (e.g. heart rate, skin conductivity, respiration activity), “verbal” cues (e.g. presence of words indicating emotional involvement), and other cues have been developed. However, the National Academies of Science (NAS) stated in its review, that none of the techniques (fMRI, EEG, linguistic analysis, voice stress

analysis etc.) will be able to replace the polygraph for screening purposes in the near future (National Research Council, 2002). This conclusion is also true in the forensic field. Subsequent experiments show that alternative methods require the development of at least the principles of analysis and interpretation of data. In addition, they do not meet higher efficiency than the polygraph (Park, Suk, Hwang, & Lee, 2013; Rusconi & Mitchener-Nissen, 2013; Wojciechowski, 2014).

The polygraph or “lie detector” is used for several purposes: security vetting, employee screening, criminal investigation, and treatment and supervision of sex offenders, and its worldwide use in law enforcement is continuously expanding. In Poland for the last 10 years, there has been an increase in the use of polygraph examinations in criminal cases, and this is especially noticeable in police investigations. This is confirmed by data from the Central Forensic Laboratory of the Police in Warsaw. In 2005, police experts conducted 38 polygraph examinations in criminal cases, and 508 in 2014.

The first meaningful use of an instrumental method of detecting deception in the criminal justice system took place in 1923, when the Systolic Blood Pressure Deception Test (SBPDT) was administered to James Frye. The test results were favourable for Frye, however, he was convicted. The trial judge and the court of appeal did not allow William Marston to give evidence because at that time, the scientific community did not sufficiently accept his method (National Research Council, 2002). Due to the Frye standard, the re-

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sults of polygraph examinations were generally not accepted for the next 70 years as evidence in American courtrooms until the Supreme Court ruled in the *Daubert v. Merrel Dow Pharmaceuticals, Inc.* (1993). The new standard did not incorporate the Frye “general acceptance” test as a basis for deciding if scientific expert testimony may be admitted as evidence. It gave judges the freedom to make a decision based on a number of criteria in each individual case. Since then, polygraph examinations have been allowed in over 20 states and 9 of the 12 federal districts (Grubin & Madsen, 2005).

Regardless of what courts think about polygraph examinations, the police use it in their investigation of crime; sometimes the purpose is to eliminate suspects, sometimes to find new lines of inquiry (Honts & Perry, 1992).

A great deal of discussion concerning the polygraph focuses on the basic assumptions and validity of two kinds of tests, which are generally used in criminal investigations: the Comparison Question Technique and the Concealed Information Test. The literature is full of diverse opinions about the reliability of both methods, which often contradict each other (Osugi, 2011). Thus, the primary aim of our article is to stress that the CQT as well as the CIT are equally useful in Polish investigation practices, especially when the police force faces difficulties which are presented in the next section.

The Comparison Question Technique is a method consisting of two diagnostic types of questions: relevant and comparison questions with concurrent measurement of physiological responses. The relevant questions are related to the crime under investigation (e.g., “Did you do it?”), and the comparison questions concern the general subject’s tension rising topics (e.g., “Have you ever done anything illegal? Did you lie to stay out of trouble?”). Additionally, the CQT consists of neutral stimuli, which serve as a buffer separating comparison/relevant question pairs (Is today Monday? Is today September?), and a single sacrifice relevant question. The test theory says that the questions that pose the greatest threat to the examinee will illicit the strongest physiological responses (Handler & Honts, 2007; Kleiner, 2002; Raskin & Honts, 2002).

For the guilty, the relevant questions are most threatening, therefore they cause greater and more consistent physiological responses than comparison questions. For the innocent, who can confidently answer “no” to the relevant questions, the arousing comparison questions are the largest threat (Horvath & Palmatier, 2008). The validity of these assumptions, however, has been questioned by several scholars and is still controversial (Ben-Shakhar & Furedy, 1990; Iacono & Lykken, 2002; Lykken 1974, 1978, 1979; Meijer & Verschuere, 2010). One of the most fundamental criticisms of the CQT is

the lack of construct validity (a valid theory of how and why the test works). The critics also argue that the unstandardized nature of the CQT is additionally intensified by the fact that formulating highly individual comparison questions depends on the skills of the polygraph examiner (Ben-Shakhar, 2002; Fidler, Schmid, & Stahl, 2002).

Critics of the CQT often point at the Concealed Information Test (Lykken, 1960) as an alternative method. The CIT is based on the assumption that only an informed person will recognize and respond physiologically to the details related to the crime which were available only to him or her because he or she committed this crime. A CIT consists of a series of multiple choice questions, where only one alternative is correct; such as the kind of weapon, the sum of stolen money, etc. The other type of questions are concerned with irrelevant control information. CIT can be conducted by using verbal or visual stimuli, such as if the perpetrator left a tool in the crime scene, it can be used as a critical element of the test. During CIT, various photos of tools can be presented, as well as real objects. When the examinee is an uninformed person, he or she is likely to show similar responses to all questions. When the examinee is an informed person, he or she is likely to recognize the critical information and consequently will show a distinct physiological response to the correct alternative (Krapohl, McCloughan, & Senter, 2009). However, just like the CQT, this method is not free from shortcomings.

The CIT is hardly ever applied in practice because the innocent as well as the guilty have typically been exposed to the information related to the crime before they were subjected to the polygraph examination (Lykken, 1974; Krapohl, McCloughan, & Senter, 2009). Additionally, contracting a valid CIT requires time-consuming field work and an examiners’ ingenuity, while a CQT may be used immediately. Another reason for the limited use of the CIT is that a suspect may have forgotten the details of the crime because of emotional stress, confusion, lack of attention, or intoxication during the crime (Kircher & Raskin, 1992). Moreover, a suspect may be involved in a series of crimes which are similar in details and will be unable to distinguish the crime-related information. Krapohl (2011) notes that the CIT has proven useful in approximately 5% of all cases (excluding Japan). In Poland, the practice of conducting proceedings and also little knowledge about the CIT methodology among police officers cause many crime circumstances to be disclosed during interrogations. Unfortunately it eliminates the possibility of using those circumstances as critical elements in the CIT.

In contrast to the practice mentioned above, in Japan CIT is considered to have a greater value than the CQT. After the examination is ordered, an expert goes to a crime scene in

order to select the relevant elements to CIT, which were probably memorised by the perpetrator. Such a situation is possibly only during the early stages of criminal proceedings. The examination is usually based on 7 or more CITs, and the examinations after the arrest of the suspect are rarely conducted because of the need to inform him or her about the circumstances of the crime (Nakayama, 2002).

During the last four decades, the assumptions of the Concealed Information Test and the Comparison Question Test, and some factors, such as the act of lying, the motivation of guilty examinees, the difference in the state of mind of the guilty and the innocent suspects during examination have been tested extensively (Ben-Shakhar & Elaad, 2003; Meijer, Selle, Elber, & Ben-Shakhar, 2014; Offe & Offe, 2007; Podlesny & Raskin, 1978; Zvi, Nachson, & Elaad, 2015). A paradigm often used in laboratory studies is the mock crime procedure, in which some participants are asked to enact a mock crime, whereas others are innocent of it. Afterwards, all the participants are examined to find out how well the CIT and CQT discriminates between the “innocent” and the “guilty”. Raskin and Honts (2002) reported that when inconclusive results are ignored, CQT laboratory studies produce the results of 91% correct decisions for the guilty and 89 % correct decisions for the innocent. In field studies, the outcomes were 98% and 75% for the guilty and the innocent, respectively. When it comes to the CIT, it is well known that it is better in detecting the “uninformed person” (specificity) than in detecting the “informed person” (sensitivity). In his review of 22 studies, MacLaren (2001) found a higher accuracy in innocent participants 83% than in guilty individuals 76%.

2 Polygraph Applications in Poland

Polygraph examinations has been present in Polish penal proceedings for over 50 years and it is slowly becoming a respected technique on par with other forensic methods (Herbowski, 2013). Its role in Polish criminal proceedings differs considerably from American solutions (Jaworski, 2006), and it is important to note that expert opinions based on polygraph examinations are becoming more and more treated as scientific evidence by the scientific community and courts. The time when this type of examination was applied only at the stage of police investigations is over. It was possible thanks to legal regulations that came into existence in 2003, which separated polygraph examination from interrogations (Herbowski, 2012). It must be emphasized that in Poland it is prohibited to conduct polygraph examinations during an interrogation and directly after it. The examinations are carried out in forensic laboratories with the consent of the person examined, by experts who are not a part of an investigative team.

In addition, experts cannot carry out post-test interviewing because the examination is not conducted in order to obtain the suspect's confession.

Article 192a § 1. of the C.C.P. (Kodeks postępowania karnego, 1997) states: In order to limit the number of suspects and to determine the probative value of the evidence disclosed ... and § 2. ... with the consent of the examinee, the expert can also use the technical means aimed at the control of the body's unconscious responses.

Article 199a. of the C.C.P. (Kodeks postępowania karnego, 1997) states: The use of technical means by the expert aimed at the control of the body's unconscious responses is only possible with the consent of the examinee.

The concept that polygraph examination is a method of verifying investigative versions concerning the examinees' involvement in a crime is becoming more and more accepted in the practice of police work in Poland (Herbowski, 2011; Jaworski, 1999). Final conclusions resulting from the examination are not formulated about the main fact, i.e. determining the perpetrator (guilty – innocent) or the truthfulness of the examinee (lying – telling the truth). The result of the examination confirms, or does not, the subject's version about his or her involvement in the crime.

The polygraph examination is especially useful in the cases of the most serious crimes, when law enforcement authorities are sometimes confronted with great problems in finding and securing classic forensic evidence, which allows perpetrators to be identified. It is important to note that such problems are universal and are true for police work everywhere, not only in Poland.

Difficult situations also include cases where the only evidence is the testimony of one person (e.g., cases of rape, corruption, robbery), and the investigations did not produce other evidence which would verify the testimony. In some cases, the testimony may be false because the testifying person may want to take revenge on the accused person or make them responsible for their own crimes. Quite often the accused have no other way of defending themselves and proving their innocence and the polygraph examination is the only method of clearing them of false accusations.

We should also mention those situations where people report crimes that never happened, then the polygraph examination is used to verify a doubtful version of the crime reported by the victim. The example of such situations can be extortion of indemnity from insurance company in cases where “the victim” reports the car theft or the false accusation of rape which, in practice, did not take place.

Another reason why the police in Poland use polygraph examinations more and more often is the limited possibility of finding evidence allowing identification of the perpetrator. The inefficiency of forensic work in Poland is confirmed by scientific research (Herbowski, 2013; Kwiatkowska-Wójcikiewicz, 2011), and the authors' own experience of investigative practice. Crimes are often committed in public places, where the chance of finding traces left by perpetrators, such as DNA or fingerprints, is small because the traces are destroyed or contaminated by the members of the public. Lack of traces may also be the consequence of the fact that perpetrators know how to cover them up effectively.

In such cases, it is not easy to find classic forensic methods which would contribute to solving difficult situations, and it is here that polygraph examinations may be very helpful. It also enables the verification of hypotheses concerning possible cooperation of the perpetrator with other people or determining the direction of investigations, e.g. when looking for a place where a body or firearms were hidden.

3 Case Study

The matters discussed above involving difficult situations and the problems experienced in collecting evidence during investigative work are exemplified in the case study presented below. Here the police were able to identify one of the co-perpetrators even though the traditional methods such as DNA sampling or examination of fingerprints did not produce sufficient evidence.

In 2011, unknown criminals carried out a series of robberies in different areas of Warsaw that lasted for a few months. The modus operandi of the criminals was characterised by a recognisable pattern in which:

- the robberies took place in the afternoon,
- the victims were the elderly who had withdrawn money out of banks located in the city centre,
- the victims used public transport to get home,
- the victims were attacked with tear gas before getting home by at least two men,
- the victims did not see the robbers because they were attacked from behind; their money was taken away and sometimes their documents were stolen.

The police established that the perpetrators knew the place where the cash was withdrawn, which meant that the victims were observed and followed from the moment when they withdrew the cash. Even though the robberies took place in public, it was difficult for the police to catch the criminals and find any witnesses despite intensive effort involved in the widespread police operation.

The traditional methods did not provide any forensic evidence. The police began to study the CCTV footage from the banks where the victims were served, and they discovered a young man who observed the customers withdrawing money.

On the basis of this operational information, the police selected Tomasz R. as a suspect. He was known to the police as someone who had committed a similar offence in Warsaw, for which he was serving a prison sentence and was sometimes allowed to leave the prison. The police confirmed that his days of prison leave coincided with the days on which the robberies took place. The suspect agreed to a polygraph examination, which was proposed by police officers. In the case of a series of crimes such as these presented above, the subject of polygraph examination should be the event best memorised by the perpetrator. This is because the person participated in a series of events that happened in similar circumstances, such as thefts or robberies, which may cause "memory trace contamination". As a result, it is impossible for a perpetrator to differentiate between the realities of particular crimes in which he or she participated. For example, if twenty flat burglaries are committed, their perpetrator might remember where each burglary took place but may not be able to recall which items were stolen from which flat. Therefore, in the case of serial robberies on the elderly as those presented above, the examiner decided that the questions asked during the polygraph examinations should be about the last crime whose circumstances the perpetrator was more likely to remember clearly.

During the pre-examination interview, the examined person, Tomasz R., claimed that he had not been involved in the assault on Joanna G., which took place on Poznańska Street in Warsaw.

The LX 4000 polygraph was used to collect the data from the examination, and the results are featured in the following charts of the CQT and the CIT used during this examination. On each chart, the top two patterns present respiratory activity recorded using pneumatic respiration transducers (P1 and P2), while the third tracing from the top shows skin conductivity (EDA channel). Finally, the bottom tracing shows continuous cardiovascular activity (CA channel). Stimulus duration is presented by the vertical rectangular grey shaded boxes with the solid line immediately following to the right marking the points of verbal responses.

During the pre-test interview, the purpose of the examination and its legal basis were thoroughly discussed, and basic biographical information including a brief medical and psychiatric history of the examinee was obtained. The examiner also explained the basics of the polygraph because the omission of this issue reduces the effectiveness of the examinations

(Offe & Offe, 2007). The primary aim of this stage was also the introduction and discussion of all the test questions.

The first method applied during the suspect's examination was the UTAH Probable Lie Test (Handler & Nelson, 2009; Raskin & Honts, 2002). The American Polygraph Association Ad Hoc Committee on Polygraph Techniques (Gougler et al., 2011) reports that Utah PLT specific-incident test produces an average criterion accuracy of 93%.

During the examination, the UTAH PLT was conducted 3 times but with the questions in a different sequence. This test consists of 3 types of test questions: N-neutral, R-relevant and C-comparison as well as two technical questions: I-Introductory and SR- sacrifice relevant. The first two questions (I, SR) act as "buffers" which habituate arousal appearing at the beginning of the test. In addition, the (I) question serves to convince the examinee that there will not be any un-reviewed questions during the examination. The reactions to both of these questions are not evaluated. Probably-lie questions (C) are similar to the issue which is under investigation, and they should be more general and cover a relatively long period in the life of the examinee. Virtually every offender should have difficulties in answering them truthfully "NO" (Raskin & Kircher, 2014).

The construction of the UTAH PLT test used during the polygraph examination of suspect was as follows:

1. I Do you understand that I will ask only the questions we have discussed?
2. SR Do you intend to answer the questions connected with the assault truthfully?
3. N Is it the year 2011?
4. C Had you committed a crime before 2010 which was not solved by the police later?
5. R Did you commit an assault in the city centre on 12 January this year?
6. N Is it January now?
7. C Had you used a dangerous tool against another person before 2010?
8. R Do you know who committed an assault on a woman in Poznanska Street in Warsaw in January?
9. N Is it Friday today?
10. C Had you committed a crime for which you were not sentenced before 2010?
11. R Did you commit an assault at Poznanska Street in Warsaw on 12 January this year?

The RQs were created in such a way as to not reveal the details of the crime because they might be used in the preparation of the CIT, which is usually carried out later on in the examination after the CQT.

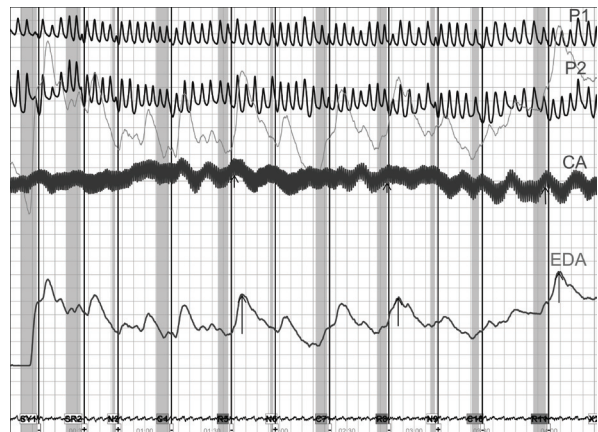


Figure 1: Utah PLT test chart.
P1 and P2 – breathing, CA – blood pressure and pulse,
EDA- electric conductivity of skin.

Figure 1 shows the first chart of the Utah PLT test. Critical questions R5, R8 and R11 caused stronger psychophysiological arousal in the EDA and the CA channel (marked by arrows) than the changes following comparison questions C4, C7, C10. According to the CQT assumptions, the Utah PLT was administered three times.

The psychophysiological reactions of the suspect in the UTAH PLT scored using Empirical Scoring System gave the outcome Deception Indicated. The reactions which were higher (marked on the chart with arrows – Fig. 1) took place after relevant questions.

The UTAH PLT test result was confirmed by the results of the CIT no. 1 and CIT no. 2. Tests. Additionally, Concealed Information Tests (CIT) were conducted complementary to the UTAH PLT test (Krapohl, McCloughan, & Senter, 2009), in which the circumstances of the crime were the critical stimuli. The CITs concerned the following issues: the amount of money stolen from the victim when committing the crime, the way the perpetrators overpowered victim, and the name of the bank where she was observed by the perpetrator. In accordance with the CIT assumptions, for the person who does not know anything about the crime, all the presented elements of the test are equally probable and therefore this person's reactions should be similar (Ben-Shakhar & Elaad, 2003), without showing any specific reaction to the details of the crime. Contrary to an innocent person, the perpetrator might remember the amount of money which was stolen, the name of bank, and the way the perpetrators acted, so he should recognise the characteristic elements of the case.

The construction of CIT no. 1 concerning the amount of money which was taken was as follows:

During the robbery the offenders took a sum of money. Those who committed this crime will know the amount of money taken away from the victim. Do you know what the amount is?

The answer of the examinee: “no”.

Thus, during the test different amount of money will be presented. Please repeat after me the presented amounts.

Did the perpetrators rob at Poznanska Street:

1. 5000 PLN?
2. 4500 PLN?
3. **6200 PLN?**
4. 1500 PLN?
5. 2700 PLN?
6. 800 PLN?

In the above test, the critical question is in position no. 3.

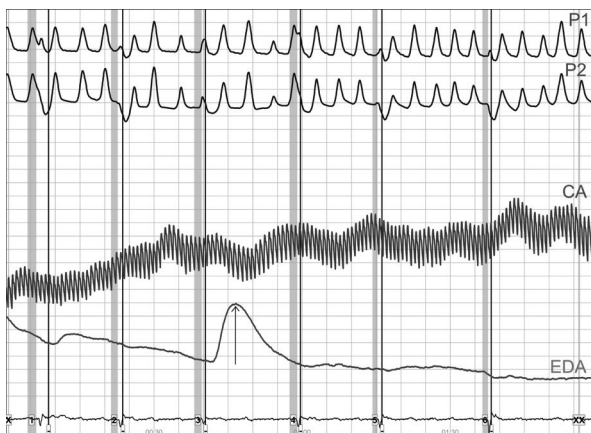


Figure 2: Concealed Information Test chart – CIT no. 1.

The first chart (Figure 2) of the Concealed Information Test (CIT no. 1) concerned the sum of money stolen during the robbery on 12 January 2011. At the bottom of the polygram there are numbers of test questions. The critical question – “6200 PLN” – is in the third position and causes the subject’s considerable psychophysiological arousal in the EDA channel (marked by an arrow). The test was presented 3 times. This means that Tomasz R. recognized the critical element although he had denied that he knew the details of this case.

The construction of CIT no. 2 concerning the tool used to overpower the victim was as follows:

During the robbery the offenders attacked the victims in a specific way. Do you know what they used to incapacitate the victim?

The answer of the examinee: “no”.

Thus, during the test the different ways or tools often used to overpower victims will be mentioned. Among them the right way which appeared in this case will be presented. Please repeat after me the presented items.

Did the perpetrators use during the robbery on 12 January 2011:

1. a baseball bat?
2. a stone?
3. **gas?**
4. firearms?
5. a wrench?
6. a hammer?

In the above test the critical question is in position no. 3.

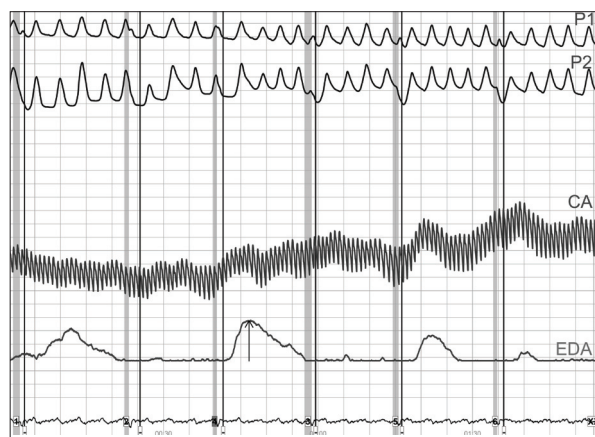


Figure 3: Concealed Information Test chart – CIT no. 2

The second chart (Figure 3) of the Concealed Information Test (CIT no. 2) concerned the way in which the offenders overpowered the victim on 12 January 2011. At the bottom of the chart there are numbers of test questions. Here, the critical question – “offenders used gas” – is in the third position and causes the subject’s considerable psychophysiological arousal in the EDA channel (marked by an arrow). This means that Tomasz R. recognized the critical element although he had denied that he knew the details of this case.

The construction of CIT no. 3 concerning the name of the bank the woman withdrew the money was as follows:

The perpetrators of the robbery know which bank the victim withdrew money from. Do you know the name of this bank?

The answer of the examinee: "no".

Thus, during the test different names of banks will be presented. Among them the name of the bank the victim withdrew money from case will be presented. Please repeat after me the presented items.

Did the victim on 12 of January withdraw the money from:

1. Nordea BANK?
2. Kredyt Bank?
3. Millennium?
4. Bank Spółdzielczy?
5. **BGŻ BANK?**
6. PEKAO SA Bank?

In the above test the critical question is in position no. 5.

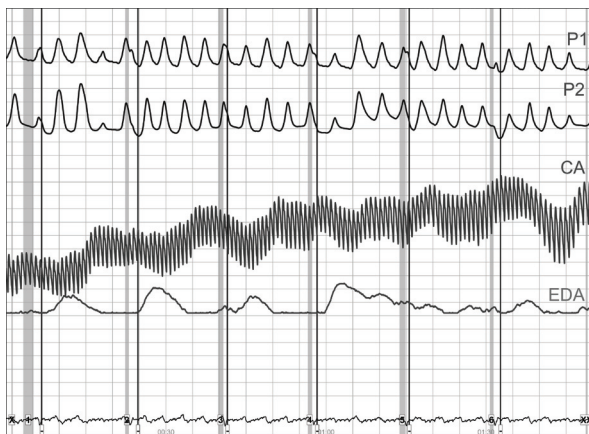


Figure 4: Concealed Information Test chart – CIT no.3.

The third chart (Figure 4) of the Concealed Information Test (CIT no. 3) deals with the name of the bank where the woman was observed by the perpetrator on 12 January 2011. At the bottom of the chart, there are numbers of test questions. The critical item - „BGŻ BANK” - is in the fifth position and does not cause the subject's considerable psychophysiological arousal. This means that suspect did not recognize the critical element of the CIT although on that day he was in the aforementioned bank.

According to the methodological rules, all tests were discussed before the start of the registration. The stimuli were presented during the tests every 15-20 second, and every test

was repeated twice by changing the order of items in the test. The recordings were evaluated using Lykken method which is based on EDA channel analysis. For confirmation of the achieved result so-called blind analysis was carried out by the expert who did not participate in the examination.

The examinee showed greater psychophysiological arousal in two of the three CITs administered during the discussed examination. In CITs no. 1 and no. 2, the suspect showed reactions to the critical stimuli - the sum of the stolen money and the way the woman was overpowered. On the other hand, no specific reaction was registered relative to the critical item in CIT no. 3, despite the fact that it was possible to recognise his face on the CCTV footage from the BGŻ BANK. This enabled a conclusion that examinee recognised two of the three characteristic circumstances of the robbery even though he declared during the pre-test interview that he did not have any connection with this crime and did not know its circumstances. The higher reactions to critical stimuli are marked with arrows in Figures 2 and 3.

The polygraph examination results did not confirm the suspect's version, according to which he did not have any connection with the robbery committed at Poznanska Street in Warsaw on 12 January 2011. This confirmed the hypothesis that he was involved in the crime, despite the fact that there were no conventional forensic traces. During the preparatory proceedings the suspect did not plead guilty. Other evidence was the result of the face identification examination based on the bank's CCTV footage.

4 Discussion

First of all, this study has confirmed once again that when performing the CQT and the CIT properly, the polygraph examination can help to solve many criminal cases. On the basis of the research evidence and their own long experience in criminal investigations, Polish polygraph examiners use both methods complementarily with satisfying results.

Both techniques have been the subjects of extensive field and laboratory research, but is the case of many diagnostic tools, the CQT as well as the CIT will not be 100% accurate. Without doubt the examiners should apply standardized procedures, however, we believe that the limitations of the CQT and the CIT cannot result in total rejection one of the procedures as it is suggested in the literature (Ogawa, Matsuda, & Tsuneoka, 2015).

Criticism of the CQT is based on two arguments: the first is that simulation studies cannot be compared with real cases

(Ben-Shakhar, 2002; Iacono & Lykken, 2002), which makes their results of little practical use. The other is that it is impossible to achieve high rates of correct identification because the technique's basic assumptions are questionable.

Contrary to the claims above, there have been many analyses of field polygraph accuracy, which show that identification rates are far higher than mere chance when different comparison questions and different incentives are used (Kircher & Raskin, 1992). Moreover, Offe and Offe's (2007) study shows that the calibration of CQ, which depends on the skills of the examiner, does not seem relevant to the accuracy of the examination. The authors found that significance of different types of questions results almost exclusively from the fundamental difference in the significance of the RQ for the guilty and the innocent and not from the manipulation of the CQs' significance by the examiner. The authors also suggest that a detailed explanation of CQ increases the rate of identification of guilty subjects examined and reduces the number of inconclusive cases.

Our observations also lead to the conclusion that even in difficult criminal cases, application of the CIT should be considered. The criticism of the CIT is not justified, at least in our experience described here. Admittedly, it was not possible to create six or seven CITs as is the case in Japan, but despite this we did not resign from its application. The poor quality of the information about the robbery made it impossible to create more than 3 CITs, but two of them were successful and useful in linking the examinee with the issues under investigation. The lack of specific reaction to the name of the bank can be explained in a few ways, the most probable is that the subject had been involved in a few similar events and consequently was unable to distinguish the details of each of them. The literature states that guilty persons are faced with complex scenes, and it cannot be assumed that all details were actually noticed, processed, and stored in memory (Nahari & Ben-Shakhar, 2011).

Our figures are offered only to present a real-life example of how useful both methods are. Figures 1, 2, 3, 4 show the physiological data recorded in response to the questions, and on the basis of these recordings, it is possible to conclude that the findings from the applied CQT and CIT are complementary.

Even though the CQT and the CIT have different assumptions, RQs' in the CQT as well as critical items in CIT no. 1 and CIT no. 2 caused a higher amplitude change in the electrodermal activity channel than the changes observed in other kinds of stimuli. According to the methodology of the CIT and the CQT, skin conductivity should be given most weight in scoring the charts (Blalock, Cushman, & Nelson, 2009).

Additionally, the subject's greater physiological changes in the CA channel after RQs were asked, as compared to CQs, also contributed to the final opinion: the examination does not confirm the examinee's versions about the lack of his involvement in this crime. Additionally, the results of CIT no. 1 and CIT no. 2 confirmed the findings from the CQT. In line with the assumptions of the CIT, the examinee knew the specific details of the crime, which were unavailable to those not connected with the investigated crime.

We found in the literature that the CQT is the most commonly used polygraph procedure, whereas the CIT is more scientifically accepted but less frequently applied (Elaad, 2015). In view of our experience, we do not favour one methodology over another as long as their diagnostic value is scientifically sound. Raskin and Kircher (2014) state that it is quite possible to have a test validated as accurate for its specified purpose without having a complete understanding of the underlying theoretical constructs or construct validity. Instead, a great deal of attention is attributed to the operations which allow using the CQT and the CIT effectively, especially in the case of the crimes where other evidence did not help to determine the right suspect. We agree with Palmatier and Rovner (2015a; 2015b), who highlight the fact that in the vast majority of day-to-day polygraph examination cases, the issues that are examined arise from situations that are far beyond a polygraph examiner's control. They also state that currently too many crimes are committed in the circumstances which make the use of the CIT method useless because there are not enough critical details of the crime available. Keeping this in mind, as practitioners, we support the idea that polygraph examiners should be aware of the strengths and weaknesses of both diagnostic methods and apply them in different configurations, collectively or individually depending on the circumstances to assess the credibility in a real life context. Simultaneously, it is necessary to train investigators how to properly collect information about the circumstances of the case so that they can later form the basis for the construction of a larger number of CIT.

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Pomen poligrafskih metod v poljskih preiskavah

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Poligrafske preiskave v poljski preiskovalni praksi temeljijo na dveh tipih testov: vizualni test prepoznavanja, t. i. *recognition test*, v formatu CIT (angl. *Concealed Information Test*) in test primerjalnih vprašanj (angl. *Comparison Questions Test* [CQT]). V zadnjih letih se je širom sveta veliko razpravljalo o prednostih in omejitvah omenjenih testov. Razlogi za razpravljanje o uporabnosti testov izhajajo iz splošne nizke sprejemljivosti poligrafskih raziskav v znanstveni skupnosti. Ta položaj je prisoten tudi na Poljskem. Posledično so se raziskovalci osredotočili na poglobljeno analizo znanstvenih temeljev in učinkovitosti obeh metod, ki je opozorila na razlike med metodama in podpirala le eno, izbrano vrsto testov. Kot rezultat trajajočih razprav so poljski poligrafski preiskovalci zaključili, da sta oba testa enako pomembna za forenzično področje, zato ne bi smela biti obravnavana kot konkurenčni, temveč kot komplementarni metodi. Oba testa sta še posebej koristna v t. i. težavnih preiskavah. Opis študije primera v prispevku kaže, da lahko v primeru pravilne uporabe obeh testov poligrafski preiskovalci učinkovito podprejo preiskovalno delo. Uporabnost testov še posebej pride do izraza v kazenskih primerih, kjer policija nima tradicionalnih forenzičnih dokazov.

Ključne besede: poligrafitanje, preiskava, vizualni test prepoznavanja, test primerjalnih vprašanj

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