Zbornik Instituta za kriminološka
i sociološka istraživanja
2016 / Vol. XXXV / 2 / 35-48
Pregledni naučni rad
UDK: 343.98
159.923.3.072

POLYGRAPH AND RELIABILITY IN PSYCHOLOGICAL ASSESSMENT: MYTH OR REALITY?*

Leposava Kron*
Institute of Criminological and Sociological Research, Belgrade

The purpose of this paper is to enlighten that every statement or conclusion of reliability od poligraph is high risk statement. After introductory historical remarks, in this paper has been discussed and analyzed empirical evidences of validity and reliability of polygraph testing, silent lie detector as an alternative procedure. In respectable academic article "Charlatanry in forensic speech science" (Eriksson & Lacerda, 2007) authors reviewed 50 years of lie detector research and came to the conclusion that there is no scientific evidence supporting that lie detectors actually work.

According to the American Psychological Association (APA, 2014 and 2013), "most psychologists agree that there is little evidence that polygraph tests can accurately detect lies".

As a result of those findings APA as an academic publisher has been removed scentific articles which used a results of polygraph research as an empirical argumentation from online databases.

Ergo, accumulated empirical evidence suggest that instruments like polygraph doesn't detect lays, in statistical meaning, more than random guessing.

KEYWORDS: Polygraph / Psychological Assessment / Forensic' s sciences / psychological reliability

* This paper is a result of research Project Crime in Serbia: phenomenology, risks and the possibilities of social intervention (47011), financed by the Ministry of Education, Science and Technological Development of Republic of Serbia
* Email: bebakron@gmail.com

1. LIE DETECTOR TEST AS AN ASSESSMENT INSTRUMENT

1.1. Note on history of polygraph machine

The polygraph (from the Greek ‘poly’ = ‘many’, and ‘graph’ = ‘to write’) is widely used by analytical staff in a variety of medical and forensic procedures for purposes other than lie detection.

Throughout history (Bull, 1988) it has often been assumed that lying is accompanied by a change in the body’s physiological activity. The polygraph is a set of equipment that accurately measures various sorts of bodily activity such as heart rate, blood pressure, respiration, palmar sweating etc. In recent years brain activity has also begun to be measured in this setting. This bodily (and brain) activity can be displayed via ink writing pens on to charts or via a computer’s visual display unit. In lie detection situations its use is based on the premise that lying is accompanied by changes in the activity measured by the polygraph.

An earliest, simple and less successful lie detector or polygraph machine was invented by James Mackenzie in 1902. The first "advanced" polygraph edition was invented in 1921 by John Augustus Larson, a medical student at the *University of California, Berkeley* and a police officer of the *Berkeley Police Department* in Berkeley, California (Abrams & Ogard, 1986).

In 1925 Leonarde Keeler refined the instrument invented by John Larson; instead of using smoke paper to record changes in the "suspects" reactions, he incorporated ink pens in order to ensure the efficiency of the machine. In 1938 the polygraph was further improved by Keeler who added relevant measuring component, galvanic skin resistance. The polygraph machine continued to advance throughout the years. John Reid introduced the idea of using "control questions" as a means of evaluation. After many years of experimenting in idea to improve the machine, polygraph was finally computerized in 1992. Thanks to that fact machine is able record the results of the test more efficiently (Bashore & Rapp 1993).

However, the traditional lie detector test, or polygraph, is not considered reliable nor valuable for scientific purposes which will be discussed later in this paper.

Polygraph detects autonomic physiological reactions. By the hypothesis, these changes in body functions are not easily controlled by the conscious mind and include bodily reactions like skin conductivity, heart rate, respiration rate, blood pressure, capillary dilation and muscular movement. These measures are supposed to indicate a short-term stress response which can be from lying because of the differential significance to the subject. The problem becomes that paticular reactions are also associated with mental effort, emotional state, anxiety rate and basic psychological characteristics; so they can be influenced by fear, anger, surprise or medications, for example.

Activities of the body not easily controlled by the conscious mind are compared under different circumstances. Usually this involves asking the subject control questions where the answers are known to the examiner and comparing them to questions where the answers are not known. Scientists claim that "lie detection" by use of polygraph has no scientific validity because it is not a well controlled scientific procedure. Government agencies in USA such as the Department of Defense, Homeland Security, Customs and Border Protection, and even the Department of Energy currently use polygraphs on regular basis to screen employees. The problem with evaluating the effectiveness of polygraphs through field studies is that the use of confessions overestimates accuracy. Someone who has failed the test is more likely to confess than someone who has passed, contributing to polygraph examiners not learning about mistakes they have made and thus improving.

Polygraphs measure arousal, which can be caused by anxiety, anxiety disorders such as posttraumatic stress disorder (PTSD), nervousness, fear, confusion, hypoglycemia, psychosis, depression, substance induced (nicotine, stimulants), substance withdrawal state (alcohol withdrawal) or other emotions; polygraphs do not measure "lies". A polygraph cannot differentiate anxiety caused by dishonesty and anxiety caused by something else (Raskin & Honts, 2002; Stolle & Wolpe, 2007)

1.2. Advanced edition: Cognitive polygraph and Electroencephalography

The wrong answer will elicit bi-hemispheric activation, from correct answer that activates unilateral response. Cognitive polygraph based on this system is devoid of any subjective control of mental processes and, hence, has some more reliability and specificity but yet to be tested in forensic practice.

Electroencephalography, or EEG, measures brain activity through electrodes attached to the scalp of a subject. The object is to identify the recognition of meaningful data through this activity. Images or objects are shown to the subject while questioning techniques are implemented to determine recognition. This can include crime scene images, for example.

Perceived trustworthiness is interpreted by the individual from looking at a face, and this decreases when someone is lying. Such observations are "too subtle to be explicitly processed by observers, but does affect implicit cognitive and affective processes." These results, in a study by Heussen, Binkofski, and Jolij (2010), were obtained through a study with an N400 paradigm including two conditions within the experiment: truthful faces and lying faces. Faces flashed for 100ms and then the participants rated them. However, the limitations of this study would be that it only had extremely small sample of 15 participants with the mean age of 24.

1.3. Eye-tracking

John Kircher, Doug Hacker, Anne Cook, Dan Woltz and David Raskin (Raskin, & Honts, 2002). have developed eye-tracking technology at the University of Utah that they consider a polygraph alternative. This is not an emotional reaction like the polygraph and other methods but rather a cognitive reaction. This technology measures pupil dilation, response time, reading and rereading time, and errors. Data is recorded while subjects answer true false questions on a computer.

They have found that more effort is required by lying than giving the truth and thus their aim to find indications of hard work. Individuals not telling the truth might, for instance, have dilated pupils while also taking longer to answer the question.

Eye-tracking offers several benefits over the polygraph: lower cost, 1/5th of the time to conduct, subjects do not need to be "hooked up" to anything, and it does not require qualified polygraph examiners to give the test.

1.4.Voice risk analysis

Voice risk analysis or voice analysis uses computers to compare pitch, frequency, intensity and micro tremors. In this way voice analysis detect minute variations in the voice thought to signal lying. It can even be used covertly over the phone, and has been used by banking and insurance companies as well as the government of the United Kingdom. Customers are assessed for truth in certain situations by banks and insurance companies where computers are used to record responses. Software then compares control questions to relevant questions assessed for deception. However, its reliability has been debated by peer-reviewed journals.

1.5. Functional Magnetic Resonance Imaging

Functional Magnetic Resonance Imaging is a technique used for multiple purposes which shows the uses of oxygen by the brain, allowing for the identification of which portions of the brain are using more oxygen, and thus being used during a specific task. This is Blood Oxygen Level Dependent or BOLD hemodynamic response. The first model of the magnetic resonance imaging (MRI) was built by Raymond Damadian and his colleagues in 1976 and it revolutionized the field of anatomical study by providing images in real-time and 3-D models of human parts. The technique is also used in drug development, a wide-variety of research efforts, and diagnostically.

Studies using functional magnetic resonance imaging (fMRI) have shown that it has potential to be used as a method of lie detection. While a polygraph detects changes in activity in the peripheral nervous system, fMRI has the potential to catch the lie at the CNS. To use an MRI as a lie detector, an fMRI should be used by placing a magnetic band as a scanner on a subject's head. However, the neurobiological systems that relate to lying are currently poorly understood. The current consensus

is that faced with a forced choice paradigm, in which a subject has the choice of telling the truth or spontaneously generating a lie, lying can be distinguished due to increased prefrontal and parietal lobe activity. More specifically, the superiormedial and inferolateral prefrontal cortices show net activation in the process of spontaneous lie generation (which involves suppression of the truthful response as well as generating a conceivable lie). There is as well evidence of increased activation in the anterior cingulate cortex when lies are told. The fMRI shows the use of oxygen by the brain, allowing for the identification of which portions of the brain are using more oxygen during a specific task. By studying the brain images, researchers are able to map the systematic procedure the brain went through to produce the action or decision. Subjects are often offered monetary incentive if they can successfully deceive the process in hopes of generating a 'real world' scenario. Using this method, an initial 2005 study on individuals (not group averages as previous studies) without pattern recognition and automation showed that lies can be distinguished 78% of the time. That statistic has risen, in one study, to 100% when predicting a lie in an individual when baseline lie/truth levels were closely studied with training from pattern recognition technology (machine learning). fMRI does rely upon the individual remaining still and safeguards in the analysis such that the questions can not be gamed by the participant. Studies have been done on Chinese individuals and their language and cultural differences did not change results. To show the robustness of this fMRI technology, a study was done that showed fMRI lie detection and truth verification technology worked even in a group of 52 schizophrenic patients, 27 of whom were experiencing delusions at the time of the study.

1.6. Functional near-infrared spectroscopy (fNIRS)

Functional near-infrared spectroscopy also detects oxygen and activity in the brain like the fMRI, but instead it looks at blood oxygen levels. It is advantageous to the fMRI because it is portable, however its image resolution is of less quality than the fMRI (Stolle & Wolpe 2007)

1.7. Brain observations

Electroencephalography is used to detect changes in brain waves.

Brain fingerprinting or MERMER uses electroencephalography to determine if an image is familiar to the subject. It is proposed to be used for lie detection and determination of whether a subject has specialized knowledge of the type most commonly found among spies or terrorists.

Cognitive chronometry, or the measurement of the time taken to perform mental operations, can be used to distinguish lying from truth-telling. One recent instrument using cognitive chronometry for this purpose is the Timed Antagonistic Response Alethiometer (TARA).

Brain-reading uses fMRI and the multiple voxels activated in the brain evoked by a stimulus to determine what the brain has detected, and so whether it is familiar.

1.8. Silent Talker Lie Detector

Non-invasive lie detection using non-verbal behavior is performed by the Silent Talker Lie Detector. Silent Talker Lie Detector, as an alternative technique to the polygraph, invented between 2000 and 2002. (Grubin, 2002).

Silent Talker monitors large numbers of microexpressions over time slots and encodes them into large vectors which are classified as showing truthful or deceptive behavior by artificial intelligence or statistical classifiers. Silent Talker research has been peer-reviewed in the *Journal of Applied Cognitive Psychology* and in the *Journal of Neural Computing and Applications*. The architecture has been constructed between 2000 and 2002 by a team at *Manchester Metropolitan University*.

Traditionally, micro-expressions are very difficult to recognize through automated facial expression analysis because of their short duration and involuntariness. Their short duration means only a very limited number of frames are available for analysis using a standard 25fps camera and their involuntariness means eliciting a particular expression to add to a comprehensive training database requires considerable time and psychological insights, to be able to recognize spontaneous facial micro-expressions with reliable accuracy, approximately 70% compared to the 50% by trained human analysts. As such, it will be a valuable tool for future computer vision studies geared towards automating the process of lie detection.

1.9. Truth serum

Truth drugs such as sodium thiopental and marijuana (historically speaking) are used for the purposes of obtaining accurate information from an unwilling subject. Information obtained by publicly disclosed truth drugs has been shown to be highly unreliable, with subjects apparently freely mixing fact and fantasy. Much of the claimed effect relies on the belief of the subjects that they cannot tell a lie while under the influence of the drug.

2. GENERAL ACCURACY AND LIMITATIONS OF ASSESSMENTS

When subjects are aware of the assessment their resulting emotional response, especially anxiety, can impact the data. Extraneous noise can come from embarrassment or anxiety and not be specific to lying. Additionally, psychological disorders can cause problems with data as certain disorders can lead a person to make a statement they believe to be truth but is actually a fabrication. As well as with all testing, the examiner can cause biases within the test with their interaction with the subject and interpretation of the data. Some research in the field focuses on manipulating the psychological and thus measuring the psychological (Ben-Shakhar. & Elaad, 2003; Kleiner, 2002)

3. CONTROVERSIES AND EMPIRICAL EVIDENCES CONTRA POLYGRAPH'S ACCURACY IN DETECTING LIES

In the peer-reviewed academic article "*Charlatanry in forensic speech science*" (Eriksson & Lacerda, 2007) the authors reviewed 50 years of lie detector research and came to the conclusion that there is no scientific evidence supporting that lie detectors actually work.

According to the American Psychological Association (APA, 2014 and 2013), "most psychologists agree that there is little evidence that polygraph tests can accurately detect lies".

Lie detector manufacturer Nemesysco sued the APA (American Psychological Association) as an academic publisher for libel resulting in removal of the article from online databases.

The cumulative research evidence suggests that machines do detect deception better than chance, but with significant error rates and that strategies used to "beat" polygraph examinations, so-called countermeasures, may be effective. Despite unreliability, results areadmissible in court in some countries such as Japan. Lie detector results are very rarely admitted in evidence in the US courts.

Clark Freshman, Professor of Law at University of California, studies lies in negotiations and lies involving lawyers. Together with Michael Wheeler at Harvard Business School, he developed a series of clips of how lies – and concealed emotions – show up in real estate negotiations. His scholarship on lies and negotiations goes well beyond Paul Ekman's (1985) original theories.

4. NONVERBAL COMMUNICATION AND UNDERSTANDING BODY LANGUAGE

People are constantly throwing off a storm of signals. These signals may be silent (non-verbal) messages communicated through the sender's body movements, facial expressions, voice tone and loudness. Microexpressions, hand gestures, and posture register almost immediately, a silent orchestra that can have long-lasting repercussions.

Research shows that clues in the nonverbal "channels" of communication (how something is said) are often more important than words alone.

There are many different "channels" of nonverbal communication: facial expressions, the clues in our voices ("vocal paralanguage"), hand gestures, body movements ("kinesics"), touch ("haptics"), and personal space. These and other "channels" are explored in a new University of California video series on Nonverbal Communication. Each video is about 30 minutes in length and comes with a

detailed instructor's guide. These University of California videotapes are produced by Dane Archer, a Professor at the University of California at Santa Cruz .

Every culture has rules about the *correct* use of space. The "proxemic" rules are unwritten and never taught-- but they are very powerful and known to all members of the culture human Proxemics the branch of knowledge that deals with the amount of space that people feel it necessary to set between themselves and others.

Body language refers to the nonverbal signals that we use to communicate. According to experts, these nonverbal signals make up a huge part of daily communication. From our facial expressions to our body movements, the things we don't say can still convey volumes of information.

According to various researchers, body language is thought to account for between 50 to 70 percent of all communication. Understanding body language is important, but it is also essential to remember to note other cues such as context and to look at signals as a group rather than focusing on a single action. Learn more about some of the things to look for when you are trying to interpret body language.

According to experts, a substantial portion of our communication is nonverbal. Every day, we respond to thousands on nonverbal cues and behaviors including postures, facial expression, eye gaze, gestures, and tone of voice. From our handshakes to our hairstyles, nonverbal details reveal who we are and impact how we relate to other people.

Scientific research on nonverbal communication and behavior began with the 1872 publication of Charles Darwin's The Expression of the Emotions in Man and Animals. Since that time, there has been an abundance of research on the types, effects and expressions of unspoken communication and behavior. While these signals are often so subtle that we are not consciously aware of them, research has identified several different types of nonverbal communication.

In many cases, we communicate information in nonverbal ways using groups of behaviors. For example, we might combine a frown with crossed arms and unblinking eye gaze to indicate disapproval.

4.1. Facial Expression

Facial expressions are responsible for a huge proportion of nonverbal communication. Consider how much information can be conveyed with a smile or a frown. While nonverbal communication and behavior can vary dramatically between cultures, the facial expressions for happiness, sadness, anger and fear are similar throughout the world.

4.2. Gestures

Deliberate movements and signals are an important way to communicate meaning without words. Common gestures include waving, pointing, and using fingers to indicate numeric amounts. Other gestures are arbitrary and related to culture.

4.3. Paralinguistics

Paralinguistics refers to vocal communication that is separate from actual language. This includes factors such as tone of voice, loudness, inflection and pitch. Consider the powerful effect that tone of voice can have on the meaning of a sentence. When said in a strong tone of voice, listeners might interpret approval and enthusiasm. The same words said in a hesitant tone of voice might convey disapproval and a lack of interest.

4.4. Body Language and Posture

Posture and movement can also convey a great deal on information. Research on body language has grown significantly since the 1970's, but popular media have focused on the over-interpretation of defensive postures, arm-crossing, and leg-crossing, especially after the publication of Julius Fast's book Body Language. While these nonverbal behaviors can indicate feelings and attitudes, research suggests that body language is far more subtle and less definitive that previously believed.

4.5. Proxemics communications

People often refer to their need for "personal space," which is also an important type of nonverbal communication. The amount of distance we need and the amount of space we perceive as belonging to us is influenced by a number of factors including social norms, situational factors, personality characteristics and level of familiarity. For example, the amount of personal space needed when having a casual conversation with another person usually varies between 18 inches to four feet. On the other hand, the personal distance needed when speaking to a crowd of people is around 10 to 12 feet.

4.6. Eye Gaze

Looking, staring and blinking can also be important nonverbal behaviors. When people encounter people or things that they like, the rate of blinking increases and pupils dilate. Looking at another person can indicate a range of emotions, including hostility, interest and attraction.

4.7. Haptics

Communicating through touch is another important nonverbal behavior. There has been a substantial amount of research on the importance of touch in infancy and early childhood. Harry Harlow's classic monkey study demonstrated how the deprivation of touch and contact impedes development. Baby monkeys raised by wire mothers experienced permanent deficits in behavior and social interaction. Touch can be used to communicate affection, familiarity, sympathy and other emotions.

4.8. Psychology of Eye Contact

The study of eye contact, also known as oculesics, is used in psychology and unconsciously by society to determine to mood and personality of a person. There are several nuances in the psychology of eye contact, most easily understood by an initial meeting between strangers. Making eye contact when being introduced to someone sends an unconscious signal to the other person that you hold him or her in high regard and are confident. However, when taken to the extreme of staring, which is prolonged eye contact, this can make others feel threatened or held in contempt, sending the opposite message. Psychologists have also determined a pattern to tell when a person is lying, which is fairly accurate. This study of eye contact is based on the eye movements a person makes before they make a statement, and where their eyes are when speaking.

Psycholinguistics studies how human beings come up with and use language. This provides deeper knowledge into how the human brain functions and how the use of language and emotion is closely tied together. This study can also provide greater knowledge of human development, both socially and emotionally. Determining what words where used, and in what context, hundreds of years ago and comparing those words to the one's used today can provide psychologists of a greater idea of where humans have been and what direction they may be taking.

5. CONCLUDING REMARKS

Although polygraph equipment does accurately measure a number of physiological activities, these activities do not reflect a single underlying process. Furthermore, these activities are not necessarily in concord either within or across individuals.

People incorrectly judged by polygraphers as lying or having guilty knowledge may be falsely convicted or lost to an organisation. Quality personnel may choose not to join organisations that use procedures known to have inaccuracy rates that are not negligible.

Research on the polygraph has not progressed over time in the manner of a typical scientific field.

It has not accumulated knowledge or strengthened its scientific underpinnings in any significant manner. Polygraph research has proceeded in relative isolation from related fields of basic science and has benefited little from conceptual, theoretical, and technological advances in those fields that are relevant to the psychophysiological detection of deception'

The polygraph is one among a number of procedures that could be used in attempts to detect deception and integrity but, like all procedures, it has inherent weaknesses. Error rates in polygraphic deception detection can be high. The most appropriate procedure or combination of procedures will depend on the

circumstances. Polygraphic deception detection procedures should not be ascribed a special status. We must not deceive ourselves into thinking that there will ever be an error-free way of detecting deception.

Polygraph tests has been used in criminal investigations in many countries including Belgium, Canada, Israel, Japan, Turkey, Singapore, South Korea, Mexico, Pakistan, the Philippines, Taiwan, Thailand, and the USA (Lykken, 1998; Raskin, 1990; Vrij, 2000).

Polygraph examiners have no other option than to measure deception in such an indirect way, as a pattern of physiological activity directly related to lying does not exist (Saxe, 1994). Three of the four most popular lie detection procedures using the polygraph (Relevant/Irrelevant Test, Control Question Test and Directed Lie Test) are built upon the premise that, while answering so-called 'relevant' questions, liars will be more aroused than while answering so-called 'control' questions, due to a fear of detection (fear of getting caught lying). This premise is somewhat naive as truth tellers may also be more aroused when answering the relevant questions, particularly: (i) when these relevant questions are emotion evoking questions (e.g. when an innocent man, suspected of murdering his beloved wife, is asked questions about his wife in a polygraph test, the memory of his late wife might re-awaken his strong feelings about her); and (ii) when the innocent examinee experiences fear, which may occur, for example, when thperson is afraid that his or her honest answers will not be believed by the polygraph examiner. The other popular test (Guilty Knowledge Test, discussed below) is built upon the premise that guilty examinees will be more aroused concerning certain information due to different orienting reactions, that is, they will show enhanced orienting responses when recognising crucial details of a crime. This premise has strong support in psychophysiological research.

REFERENCES

(1) Abrams, S. & Ogard, E. (1986). Polygraph surveillance of probationers. *Polygraph*, 15, 174–182. Abrams, S. & Simmons, G. (2000). Post-conviction polygraph testing: Then and now. *Polygraph*, 29, 63–67
(2) *American Psychological Association* (2013) *The Truth About Lie Detectors (aka Polygraph Tests)*. New York: American Psychological Association (APA).
(3) Bashore, T.R. & Rapp, P.E. (1993). Are there alternatives to traditional polygraph procedures? *Psychological Bulletin*, 113, 3–22
(4) Ben-Shakhar, G. & Dolev, K. (1996). Psychophysiological detection through the Guilty Knowledge Technique: Effects of mental countermeasures. *Journal of Applied Psychology*, 81, 273–281
(5) Ben-Shakhar, G. & Elaad, E. (2003). The validity of psychophysiological detection of information with the guilty knowledge test: A meta-analytic review. *Journal of Applied Psychology*, 88, 131–151
(6) Ben-Shakhar, G. (2002). A critical review of the control questions test (CQT). In M. Kleiner (Ed.), *Handbook of polygraph testing* (pp.103–126). London: Academic Press.

(7) Ben-Shakhar, G., Bar-Hillel, M. & Kremnitzer, M. (2002). Trial by polygraph: Reconsidering the use of the Guilty Knowledge Technique in court. *Law and Human Behavior*, 26, 527–541.
(8) British Psychological Society (1986). Report of the working group on the use of the polygraph in criminal investigations and personnel screening. *Bulletin of the British Psychological Society*, 39, 81–94.
(9) Bull, R. (1988). What is the lie-detection test? In A. Gale (Ed.), *The polygraph test: Lies, truth and science.* (pp.10–18). London: Sage
(10) Carroll, D. (1988). How accurate is polygraph lie detection? In A. Gale (Ed.), *The polygraph test: Lies, truth and science* (pp.19–28). London: Sage
(11) Carroll, D. (1991). Lie detection: Lies and truths. In R. Cochrane & D. Carroll (Eds.), *Psychology and social issues: A tutorial test* (pp.160–170). London: The Falmer Press.
(12) Ekman, P (1985) *Telling Lies: Clues to Deceit in the Marketplace, Politics, and Marriage* . New York: W. W. Norton & Company
(13) Ekman, P., O'Sullivan, M. & Frank, M.G. (1999). A few can catch a liar. *Psychological Science*, 10, 263–266
(14) Elaad, E. (2003). Is the inference rule of the control question polygraph technique plausible? *Psychology, Crime and Law*, 9, 37–47
(15) Eriksson, A. and Lacerda, F. (2007) Charlantry in forensic speech science: A problem to be taken seriously. *International Journal of Speech Language and the Law*. 14:2
(16) Fiedler, K., Schmid, J. & Stahl, T. (2002). What is the current truth about polygraph lie detection? *Basic and Applied Social Psychology*, 24, 313–324.
(17) Grubin, D. (2002). The potential use of polygraph in forensic psychiatry. *Criminal Behaviour and Mental Health*, 12, 45–55.
(18) Gudjonsson, G.H. (1988). How to defeat the polygraph tests. In A. Gale (Ed.), *The Polygraph Test. Truth, Lies and Science* (pp.126–136). London: Sage.
(19) Heussen, Binkofski, and Jolij (2010) *The semantics of the lying face: An EEG study.*
(20) Hindman, J. & Peters, J.M. (2001). Polygraph testing leads to better understanding of adult and juvenile sex offenders. *Federal Probation*, 65, 8–15.
(21) Honts, C.R. & Amato, S.L. (2002). Countermeasures. In M. Kleiner (Ed.), *Handbook of polygraph testing* (pp.251–264). London: Academic Press
(22) Honts, C.R. (1991). The emperor's new clothes: The application of the polygraph tests in the American workplace. *Forensic Reports*, 4, 91–116.
(23) Honts, C.R., Kircher, J.C. & Raskin, D.C. (1996). Polygrapher's dilemma or psychologist's: A reply to Furedy's logicoethical considerations for psychophysiological practitioners and researchers. *International Journal of Psychophysiology*, 20, 199–207.
(24) Honts, C.R., Kircher, J.C. & Raskin, D.C. (2002). The scientific status of research on polygraph techniques: The case for polygraph tests. In D.L. Faigman, D. Kaye, M.J. Saks & J. Sanders (Eds.), *Modern scientific evidence: The law and science of expert testimony* (Volume 2) (pp.446–483). West: St. Paul Minnesota
(25) Honts, C.R., Raskin, D.C. & Kircher, J.C. (1994). Mental and physical countermeasures reduce the accuracy of polygraph tests. *Journal of Applied Psychology*, 79, 252–259
(26) Kleiner, M. (2002). *Handbook of polygraph testing* (Edited book). London: Academic Press
(27) Kron, L (2016) dostupno na: http://www.vreme.co.rs/cms/view.php?id=1418866 vreme pristupa 11 avgust 2016
(28) Lykken, D.T. (1998). *A tremor in the blood: Uses and abuses of lie detection* (2nd ed.). New York: Plenum.

(29) Mann, S., Vrij, A. & Bull, R. (2004). Detecting true lies: Police officers' ability to detect suspects' lies. *Journal of Applied Psychology*, 89, 137–149
(30) Morse, J S (2006). Brain Overclaim Syndrome and Criminal Responsibility: A Diagnostic Note, 3 *Ohio State ournal of Criinal Law* pp: 397, 397 (2006).
(31) Morse, J S (2007).The Non-Problem of Free Will in Forensic Psychiatry and Psychology, 25 *Behavioral Science Journal*. pp: 203- 216
(32) National Research Council (2003). *The polygraph and lie detection. Committee to Review the Scientific Evidence on the Polygraph.* Washington, DC: The National Academic Press
(33) Raskin, D. (1990). Polygraph techniques for the detection of deception. In D.C. Raskin (Ed.), *Psychological methods in criminal investigations and evidence* (pp.247–296). Springer: New York.
(34) Raskin, D.C. & Honts, C.R. (2002). The comparison question test. In M. Kleiner (Ed.), *Handbook of polygraph testing* (pp.1–48). London: Academic Press
(35) Saxe, L. (1994). Detection of deception: Polygraph and integrity tests. *Current Directions in Psychological Science, 3,* 69–73.
(36) Stolle, S. E & Paul Root Wolpe, P.R (2007) Emerging Neurotechnologies for Lie Detection and the Fifth Amendment, 33 Am. *J.L. & Med*. 359, 368-69
(37) Vrij, A. (2000). *Detecting lies and deceit: The psychology of lying and the implications for professional practice*. Chichester: Wiley
(38) Wilcox, D. (2000). Application of the clinical polygraph examination to the assessment, treatment and monitoring of sex offenders. *Journal of Sexual Aggression*, 5, 134–152.
(39) Wilcox, D.T., Sosnowski, D. & Middleton, D. (2000). Polygraphy and sex offenders. *Forensic Update,* 61, 20–25.

Zbornik IKSI, 2/2016– L. Kron
„Polygraph and reliability in Psychological Assessment: Myth or Reality?”, (str. 35-48)

POLIGRAF I POUZDANOST U PSIHOLOŠKOM PROCENJIVANJU: MIT ILI REALNOST

Cilj ovog teksta je da pokaže da je svako tvrđenje ili zaključak o istinitosti nekog iskaza na osnovu poligrafa - tvrđenje visokog rizika. Kao što je dobro poznato, detektor laži detektuje autonomne reakcije subjekta na "kontrolna pitanja" koje nije lako kontrolisati svesno budući da uključuju telesne reakcije kao što je to srčana radnja, stepen respiracije (znojenja) krvni pritisak, dilatacija kapilara, mišićne pokrete etc. Pretpostavlja se da ove mere trebe da pokažu promtne, kratkotrajne reakcije na stres koji bi trebalo da izazovu teme važne za subjekta. Problem je u tome što na te reakcije može uticati strah, ljutnja ili iznenađenje, tako da parametri na poligrafu mogu pokazivati kao da neko laže, a u stvari mu ključne reči izazivaju emocionalne reakcije koje ne može da kontroliše i psihološki ulazi u poziciju žrtve. Obrnuto, sociopate koje su vične manipulacijama, mogu vešto "prevariti" poligraf budući da čin laganja u manipulativne svrhe psihopatama ne predstavlja nikakav problem.
Danas postoji solidna empirijska evidencija čiji rezultati pokazuju da upotreba poligrafa nema naučnu validnost i ne smatra se naučnom procedurom niti se rezultati dobijeni na poligrafu smatraju pouzdanim.
Profesor Erikson sa saradnicima objavio je 2007. kapitalni rad "Šarlatanstvo u forenzičkim naukama" (ref. Eriksson, A. and Lacerda, F. (2007). Charlantry in forensic speech science: A problem to be taken seriously. International Journal of Speech Language and the Law. 14:2). Autori su analizirali rezultate pedesetogodišnjih istraživanja i iskustava sa poligrafom i došli do zaključka da ne postoji naučna evidencija da detektori laži daju korektne i pouzdane rezultate.
Prema zvaničnom saopštenju Američke asocijacije psihologa (APA: American Psychological Association) izdatom 5. avgusta 2004. i ponovljenom 14. avgusta 2013. "Poligraf ne daje korektne ni validne podatke."
Ergo, akumulirana istraživačka evidencija sugeriše da mašine tipa poligrafa ne detektuju neistine, statistički posmatrano, više nego "randomno".

KLJUČNE REČI: poligraf / psihološka procena / forenzičke nauke / psihološka pouzdanost