



Report from the 54th Seminar of the American Polygraph Association

The 54th Seminar of the American Polygraph Association was held in Orlando from 25 to 30 August 2019. The keynote lecture following the official opening, on a motivational and patriotic tone, was delivered by Greg Steube Senator for Florida, and a former Green Beret. The subjects of the other papers focused on psychophysiological examinations using polygraph and covered among others:

1. Comments on procedures in institutions employing polygraphers

- a) questions referring to polygraph use in screening applicants to work or service, supported by empirical evidence:
 - acts of intolerance, e.g. on ethnical, racial background, home violence/family violence,
 - criminal behaviours in adult life, contacts with people connected to criminal groups,
 - problems with previous employers (disciplinary sanctions),
 - current and regular drug taking in a specific period of time (without attempts at detecting cases of occasional substance use in distant past).
- b) scientifically proven predispositions of candidates for good polygraphers (significant for recruitment and choice of training):
 - openness to new experience,
 - meticulousness,
 - developed needs of achievement, power, and belonging,
 - ability to notice and appreciate emotions.

2. Methodological suggestions, notably:

a) suggesting the approach in post-examination interviews in case of results typical of deception:

- Communicate directly, unambiguously, and assuredly to the subject that he or she did not tell the truth, refer to the obvious results of the test, and refer to the other evidence, whether actual or implied. You must be self-assured and certain of the data on the curves. (There is no place for any doubts, hypothetical claims, or pointing to alternative solutions).
- This is when denial usually sets in. Interrupt immediately, retaining contact with the subject. Bereave the subject of all hopes that they will be able to persuade that an error was made in test results. If need be, talk uninterruptedly to the subject, even for 10 minutes, using such words that he or she actually begins to listen. Emphasise the importance of your statement. Should you at that moment allow the subject's denial, he or she will later find it more difficult to revoke it.
- Then give the subject hope, saying that the world does not end with negative test results and there is still an opportunity to improve their position and explain the offence committed – underline that the examinee is actually no professional criminal only someone who committed a mistake that is probably not habitual.
- Should the subject lay the blame on "the machine" emphasise that it is not the machine that makes the decision as it only records, like a voice recorder or a thermometer, and the results come directly from the subject's organism.
- Suggest reasons for admitting (rationalisation of behaviour, projection on other people, diminishing the importance of the case), never lay the blame.
- Prevent the withdrawal of the subject: come closer, you may e.g. touch the shoulder, lower the tone of your voice, speak more slowly, call the subject by the first name.
- Observe the non-verbal signs of "giving up" including head nodding, eyes down, heavy sighs, and/or tears.
- Once your interlocutor has admitted to a detail, reinforce that he or she has done well and continue to obtain more information.

b) ways to reduce the inconclusive test results:

- using test data for analysis: special decision points, proper for the ESS-M system with doubly weighted EDA parameter,
- conducting an appropriate interview with the subject; presenting clear operational definitions using thematic maps,
- quality assurance procedures,
- greater automation of examination process,
- use of PPG sensor,
- recording additional curves,

- improved selection of critical questions for verification and amendments of the content of the questions.
- c) comments on measurements of the electrodermal activity (EDA):
- record electric conductivity (rather than resistance) of the skin and analyse data at the lowest filtering level,
 - in CQT tests, average latency of the onset of electrodermal reaction is 2.2 seconds after the stimulus; limitations of the nervous system make it never come earlier than after 1.2 seconds,
 - use latency typical of a specific individual as a guideline for assessment whether reaction on the EDA channel began at the proper time,
 - return of the EDA curve to homeostasis is not always necessary for definition of the start of a reaction: focus on the point of change and tendencies typical of the subject,
 - the optimum minimum difference between reaction to a critical question and reaction to a comparative question in ESS test data analysis systems, federal three-level scale, and “greater is better” principle should be within the range of 10÷20%,
 - the EDA parameter can even be assessed in the case of movement and deep breath, if there are no reasons to believe that this caused a change of reactions; a lower EDA amplitude coupled with movement or deep breath can be assessed in comparison to a greater EDA amplitude in question is free from artefacts (however, the opposite should not be done, that is a stronger EDA reaction with artefacts should not be compared to a weaker EDA reaction without artefacts).
- d) guidelines on good practices in conducting pre-employment screening tests include:
- avoid overextensive relevant (critical) questions, e.g. referring to the credibility of answers in the whole questionnaire,
 - use only and solely such tests and methods of data analysis that are scientifically validate,
 - do not provide initial instructions concerning breathing,
 - use thematic maps in the interview,
 - use additional motion sensors and photoplethysmograph.

3. **Psychological issues**, including

- a) various distortions of psychological nature that decide whether a given individual can be polygraph tested. It was recommended that polygraphers pay attention to the following circumstances deciding whether individuals can be subjected to polygraph examinations:
- faculty of abstract thinking, understanding the significance of the situation,

- fundamental understanding of good and evil, and differences between truth and lie,
 - understanding benefits from and consequences of lies and various behaviours,
 - maintaining coherent orientation in time and space,
 - presence of any form of psychosis,
 - doubts concerning the minimum level of intelligence of the subject,
 - inability of unassisted coping with psychological issues.
- b) theoretical considerations concerning psychological foundations of polygraph examinations – the theoretical concept of Relevant Issue Gravity (RIG):
- The force caused by the accrual of features of the critical issue that attracts the attention of the subject, which results from the fact that the verified issue is of critical character for a given test due to specific circumstances of the case and personal circumstances of the subject. This concerns everyone, whether sincere or insincere, and a significant disregard for other test questions and stimuli is a side-effect.
 - under normal conditions, truthful people do not have memories of the event that the investigation concentrates on, as they were not involved; on the other hand insincere individuals carry a burden of memory traces and true emotions resulting from their connection to the event. This makes the force of RIG greater in non-truthful/deceptive individuals. For them, the critical question is of utmost significance in the examination. Other factors that influence the force of RIG are of emotional and motivational nature, and include the cognitive burden. The force of RIG regulates the level of free attention that can be assigned to comparative questions.
 - Other factors that may be of significance for RIG include the severity of legal consequences; the emotional load connected to the specific issue of a given case, independent of legal qualifications; personality traits; criminal history; past experience with polygraph tests; social status; gravity of collected evidence of guilt; the course of prior interrogation; and media coverage of the case.
- 4. Issue of distorting correct results of the examinations (countermeasures).**
- a) benefits from applying Masseter Headset, mandible muscle activity sensor, capable of identifying countermeasures undetectable by other sensors. Additionally, the headset that contains the sensor limits external sonic stimuli. However, pointing specifically to the type of activity observed is discouraged while issuing instructions checking excessive motions of the subject.
- b) laboratory tests concerning mental countermeasures conducted by Colombian polygraphers: results obtained prove that using mental countermeasures (erotic thoughts and counting backwards) according to instructions provided allow all people who previously had direct contact with polygraph (professional polygra-

phers and employees of polygraph school not practising such examinations) to false test results. Every other subject from the basic course efficiently altered test results. The ploy had no significant effect in the group of people entirely from outside the profession.

However, the results of studies from Colombia diverged significantly from other results obtained previously in the area. As far as they confirmed that countermeasures (also mental) are not efficiently used by people without specialist training, results of “combating polygraphers” by people having knowledge of polygraph examinations obtained in Colombia were much higher than ever before. The reason behind is believed to lie in the limitations of laboratory experiments (too weak motivating stimuli for critical questions, lack of real threats and consequences for the examinees) as well as alleged competency insufficiencies of Colombian researchers. Independent of these, Manuel Novoa-Bermúdez, president of the Colombian Polygraphers Association, announced continuation of the experiment this time entering a potential antidote into the extermination procedure, namely keyword repetition together with the answer given for the given critical question.

5. New technologies to be used in the detection of deception and for purposes of investigations

- a) neuroimaging: a meta-analysis of the results of several dozens of published scientific studies allowed to determine the areas of the brain activated by deception. Activation by deception occurs in the prefrontal cortex and parts of the telencephalon. In turn, telling the truth significantly activates the postcentral gyrus and also a part of telencephalon. This part is used for processing negative emotions. However, further examination of the role of these areas of the brain in deception and truthfulness requires further examination.
- b) application of virtual reality (VR) for forensic procedures: reconstitution of crime scenes, reinforcement of spatial memory of the interrogated individual.

There was numerous labs on polygraph examination standards and legal issues, including argumentation justifying evidence from expert polygrapher witnesses. Presentations of criminal cases that resorted to polygraph examinations were inspiring, and concerned among others arson, missing/killed children, extortion, and a bank robbery. The new president of APA, Darryl Starks, a polygrapher with long-term work experience for American prosecution was presented. The following annual APA seminars are planned to be held in New Orleans (2020), Chicago (2021), Las Vegas (2022), and again in Orlando (2023).

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