

NEUROLINK PAPER PENCIL LIE DETECTOR TEST

Sh. Shankar D. Komarpant

(Individual)B-IX-3, Alto Porvorim, Bardez, Goa

ABSTRACT

People tell lie when anticipate fear of the things which the individual witnessed, heard or directly involved in it. However it has been said that emotional things are deep seated in the brain modalities to its secondary part of our brain and while telling lie, physical appearance cannot hide truth.

Since from ages many technique come up of lie detector, among polygraph and fMRI, which gives significant results of lie detection. Utilization of these tools requires lengthy procedure, it is cost oriented and qualified experts services are needed.

The author of this paper, developed sophisticated tool of lie detector. This tool is termed as neurolink-paper pencil lie detector test. In this test subject is asked to draw star or circle on graph paper sheets, comprising control sample, dummy sample and third sheet while questioning relevant case fact. Individual's eyes pupil dilates while telling lie as a consequences of attentional efforts, thus on comparism graph sheets one can read out mind set of subject. Beside subjects facial appearance is being recorded and analyzed. This tool is simple to use, cost effective; no expert service is needed, thus termed as indigenious lie detector test.

Key words: *Amygdale, cortex, dilated pupil, brain modalities, somatosensory.*

I. INTRODUCTION

The criminals of new generation are quite expert in escape from the clutches of law. The modus operandi of the criminal varied as the new tool of investigation introduced. Some time the criminal are let free for want of sufficient evidence to prove the case as the lie detector test evidence is not admissible as whole evidence in the eye of judiciary. Some expert succeeded in bypassing the lie detector test. In some cases where in subject is having minor/mental disorder or head injury, cannot undergo lie detector test. Most of the successful inventions tool such as Polygraph lie detector application is under a question.

The latest lie detector software after Polygraph is fMRI (Functional magnetic resonance imaging). The scientists' conclusion is that silent fMRI detected more activation voxels (voxel is a unit of graphic information that defines a point in three dimensional space) in all frequencies compared with conventional fMRI.

Lying can cause increased autonomic arousal (Nerve disorder that affects involuntary body functions including heart rate, blood pressure i.e. physical readiness for activity). Changes in autonomic arousal are detected by measuring pulse rate, respiration, blood pressure, sweating, and skin conductance response or electro dermal activities. The functional magnetic resonance imaging lie detector result gives 90 % hence the fifth Amendment of "right against self-incrimination" may have not accepted this software for legal considerations.[1]

In regards to my lie detector test tool the ethical committee Boards will not raise objection for, as in this tool, subject is not given tooth serum as such given in Narco analysis test [7], or hypnosis therapy [3]. Physically it is



not possible to refer each and every suspected subject for lie detector test who are suspected in criminal act. The investigation agencies have to observe lengthy & legal procedures. Hence I attempted to develop my own tool of lie detector which is very simple to use. Although this tool is still at primary stage of further development, one can use the same as preliminary investigation to screen out the individual telling lie. In corporate most of the HR Managers solve their inner company problems at their level and if not then they file criminal cases before concerned authorities. This tool is paper pencil tool and almost impossible to screw the test, this tool is very useful and essential at this stage to solve internal issues. The author of this paper has constructed this tool purely for lie detection by developing and scraping his own tools to give sophisticated tool, whereas Lie detectors tools such as polygraph, fMRI, Narco, Brain mapping, hypnosis were innovated for solving health issues. Similarly there were researches conducted by different innovators over dilation of eye pupil. The finding of researches helps Doctors in taking care of eyes as well as diagnoses of mental health issues. The Poets, philosophers, and artists throughout history intuition were made tangible by researchers that eye to be the portals to the mind. Eyes broadcast mind better than any other facial feature. The pupil, especially, has been investigated as an index of mental states, given its tendency to dilate to major stimuli such as emotionally arousing scenes, painful stimulation and task-relevant numbers.[2] While eyes dilated, vision will be blurry and one will have trouble for focusing on close objects and also will be extra sensitive to bright light. I experienced, while I was under influence of alcohol I have tendency of vomiting upon closing my eyes. I also observed that while I was doing stressful work continuously my right eye becomes radish and paining.

So considering the minds physical appearance on face I have developed my paper pencil lie detector test. Three graph sheets were used to draw star/circle in each graph post, comprising control sample, natural sample and actual test sample under watch of time keeper while drawing each graph line. Observer has given the task of recording other facial movements, while control sample and question answers. The individuals high errors in third sheet and high facial movements shows that particular individual is telling lie.

There is an ethical issue that innocent people were referred for polygraph lie detector test, on mere suspicions. I hope that innocent people will welcome to prefer my paper pencil tool if they come under suspicion in any criminal case.

II. PRIME SENSING ORGANS BRAIN

Primary visual cortex, primary auditory cortex, somatosensory cortex, limbic region.

2.1 PRIMARY VISUAL CORTEX

The function of the primary visual cortex is visual perception.

2.2 PRIMARY AUDITORY CORTEX

This region of the brain is responsible for processing of auditory system (sound-wave information.)

2.3 SOMATOSENSORY CORTEX

The somatosensory system is a diverse sensory system comprising the receptors and processing centers to produce the sensory modalities such as touch, temperature, proprioception (body position), bones and joints, internal organs.[4]



2.4 LIMBIC REGION

The limbic area of brain has many parts. They are important to memory emotions, smell and hunger (test). They also help determine how you respond to danger.

2.5 LOBES

2.5.1 FRONTAL: Thoughts, decision, feelings, moving.

2.5.2 TEMPORAL: Hearing, speaking, learning

2.5.3 PARIETA: Touch, language, moving

2.5.4 OCCIPITAL: Vision.

2.5.5 AMYGDAL: An almond shaped cluster of small structures near the limbic region. The amygdala plays a key role in regulating emotions like anger, fear, love and sadness.

2.5.6 DENDRITE: A branch like part of a neuron that receives impulses and information from other neurons.

2.5.7 HIPPOCAMPUS: Structure in the limbic region that helps to store and proves memories and then helps to find them when we want to remember something. It can also affect emotions.

2.5.8 PRIMARY MOTOR CORTEX: The basic function of the brain is to produce behaviors- voluntary movements. To carry out goal directed movements our motor cortex must first receive various kinds of information from the various lobes of the brain.

2.5.9 WERNICKE'S AREA: Is the region of the brain that is important in language development (Brocas's area is related to the production of speech).

III. SILENT FUNCTIONS OF BRAIN

The individual Primary Motor Cortex brain receives impulses from different Lobes whatever the subject had witnessed/observed through five sensing organs involving sensory brain. The amygdala plays important roll to compact the data and encode in Hippocampus brain Modalities. The emotional information is deep seated in brain modalities that one cannot easily forget. On asking question or thinking relating to that incident witnessed or heard the concerned encoded information stimulate and open. Individual can reply through Wernicke's area brain, which develops language. (Broca's area is related to production of speech).

The act of commission of crime, witnessing and hearing are emotional information and that encodes in Hippocampus. Right amygdala (sub-conscious) is key performance to store and remember emotions. Left amygdala is said to be conscious brain, relates with cognitive behaviors.[5] One can tell lie while Beta wave length cycle state while left amygdala is in active.[6]

IV. METHOD

Take three sheets of graph papers, A4 size. One fine pointed ball pen to draw star/circle in graph square, one timer clock to record the time consumes. Prepare questionnaires to be asked related to the concerned case. Study the case carefully and prepare the questionnaire as emotional so that the individual shall put efforts to recall from subconscious information to reply each answer carefully. Select the room having bright light. Keep one fine top finished table by touching wall which is not having window or door. Use cello tape to fix the graph



paper on table while drawing. Keep chair for subject to sit and chairs at the left and right side of subjects for time keeper and subjects' movement observer with writing pad. Keep one chair behind the chair of subjects' seat, where the examiner has to sit and ask questions.

If your case is murder case than Control questionnaire be prepared of theft or any other case. (Reply should be in Yes or No)

While preparing questionnaire of Murder case ensure that the questions should be in uphazard and not chronologically arranged. Each question must be arranged in highly emotional wordings :(Reply should be in Yes or No)

Step –I: Explain the individual subject about all steps of this test. Ensure that subject is not under the influence of alcohol or drugs etc. Subject should be physically and mentally fit for the test. If the subject uses vision glasses, allow to use till completion of test. Make the subject relaxed by counseling. Ask the subject to close the eyes and lean head on table to subject's right side for two minutes, so as to stimulate right brain. [8] Place first graph sheet on table for control sample. If the subject is literate ask to draw small stars in each block without stopping. Time keeper has to record the time consumes at each line of graph. Observer has to note down each movements of the subjects while drawing the graph, line wise. (Blinking of eyes, repeating answers, looking left or right side, head movements hang on steadily, or up & down etc).

Step – II: - Give second sheet to draw with same style. While drawing this sheet examiner has to ask control sample questions and the individual has to reply each question. The time keeper will note down the time of each question and time taken to reply each answer. Second observer will note down the movements during each reply.

Step –III: - Give third sheet to draw with same style. Now ask questions on particular related case and observe all steps as par with step-II.

Step-IV: - Comparison. Compile the time consumed for drawing graph step –I to step –II. Note down the time consumed for control sample and natural sample step-II. Then compile the sheet –II with sheet-III.

Step-V: - Now compile the observations from step-I, II & III.

V. OBSERVATION/FINDINGS

If the subject is telling truth:

- The graph sheet-I, control sample will show higher number of drawings, & neatly.
- The graph sheet-II, natural sample will show little less number of drawings, not so neatly.
- The graph sheet-III, will show little less number then sheet No.II, not so neatly.
- The facial movements will show normal in each step.

If the subject is telling lie:

- The graph sheet-I, control sample will show higher number of drawings, neatly or comparatively less number of drawing if the subject is trying to screw the test.
- The graph sheet-III, will show little less number then sheet No. II, not so neatly or par with sheet-I, if try to screw the test.



- The graph sheet-III, will show very less numbers drawing and will consume more time than sheet No. II, or par with sheet –II, but drawing will not be neatly if the subject has try to screw the test.
- The facial movements will show very high comparatively from sheets–I & II.

VI. SUBJECTS

This neurolink paper pencil test is still under final touch of further improvement and accordingly it will be placed before Ethical committee board Madras, as it is mandatory as per Ethical Guidelines for Biomedical Research on Human Participants, 2006 Page 11-15. Our constitution act 20(3) says “No person accused of any offence shall be compelled to be witness against himself”. Law is living process, which changes according to the changes in society, science, and ethics and so on. My submission is that, science has power to repeal the definition of ‘person’. Every person has mind which categorized as conscious, sub-conscious and super conscious. Most of the lie detector principle are reading sub conscious mind. Accordingly there is need to do researches in this direction and do to modify definition of word ‘person’ substituting words “conscious mind person” in act 20(3).

My experiment subjects are limited to 8 male persons including me, age group from 18 years to 54 years. All the subjects were given puzzles and mathematic to solve at the stage-III and simple questions at the stage-II. Two subjects tried to screw the test but test results came to peak at stage-III, as they put extra efforts on brain to screw.

VII. CONCLUSION

Digital and toxical measurement of lie detector test having ethical issues and hence the test results are not fully admissible by judiciary on the grounds of some ethical issues. The advantages of present Neurolink paper pencil lie detector test is easy to conduct in short time period, no laboratory and experts are needed; however examiner limitation should be skilled in psychology and having experience in the field of investigation. This tool is cost effective and indigenous, thus its application in small scale industries for recruitment of employees, private detective agencies will be beneficial rather than Law enforcement agencies as there is no scope for ethical issue. Many a time innocent people come under suspicions and have to face unavoidable consequences to prove themselves as innocent, and hence this sophisticated tool is ideal, which shall give some relief for giving natural justice for innocent people.

REFERENCES

Journal Papers

- [1] Bennett L.Gershmon, Elisabeth Haub School of Law of pace University. 9-1998-Lie detection. The supreme court’s Polygraph Decision, *New York State Bar Journal* 9-1998. *DigitalCommons@Pace*.
- [2] Olivia E.kang, Katherine E.Huffer, Thalia P.Wheatly, August 27,2014, <https://doi.org/10.1371/journal.pone.0102463>, *PLOS journal*. Pupil Dilation Dynamics Track attention to high-Level Information.



Books

- [3] John.H.Edgette, Psy.D and Janet Sasson Edgette, Psy.D, The hand book of Hypnotic Phenomena in Psychotherapy

Theses:

- [4] J. Kevin O'Regan & Alva Noe, behavioral and Brain Sciences (2001) 24,939-1031, sensorimotor account of vision and visual consciousness.
- [5] Wolfgang & steven Looi, brain parts and function, Brain health and puzzles, Info.com, www.brainhealthandpuzzles.com/brain_parts_function.html
- [6] freedomtek, activation of right and left side of the brain, www.freedom.org/en/first-steps/activation_right_and_left_side_of_brain.php

Proceeding papers:

- [7] Urja.B.Dave, Nirma University of Science & Technology, Institute of law, Ahmadabad, Constitutional Validity and Narco Analyses test.
- [8] Samreen Amir, nimrah Ahmed and Bhavani Shankar Chowdhary, Sir Syed University of Engineering and Technology, Karachi, Mehran University of Engineering & Technology, 3rd International conference, Instrumentation, communication, Informations, Technology and Biomedical Engineering (ICIC-BME)-2013.November-2013, DOI:10.1109/ICIC-BME.2013.6678494.Lie detection in interrogations using Digital signal processing of brain waves.