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A COMPREHENSIVE REVIEW OF LIE DETECTORS WITH SPECIAL REFERENCE TO SOCIAL DIMENSION

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Abstract

This paper describes in brief the different types of tests used to detect deception that has emerged due to advancement in technology. It discusses the contexts and methods by which these are administered and reviews its validation through different studies that unfold its components. The paper also explains the social and psychological dimensions of the polygraph test on the basis of studies undertaken by different authors, and points out the challenges posed by the deployment of these interrogation tests that could be further studied and researched by social scientists in the area scientific testing.

Introduction

It is extremely difficult to detect whether a person is lying; in fact it is difficult to even demarcate differences between honesty and deceit. The concepts are so general and it entails the exploration of the physical, biological, economic, social and political mindset and, as such, is difficult to capture through scientifically formulated instruments. In such a situation of confusion, "technology assessment" is advocated as means of conceptual clarification. Technology assessment is one of the methods used for synthesising social science research and theory for policy makers. It requires unbiased assessment of social research presented in understandable and policy relevant form. The potential for systematic integration of social research and their function in a political and policy environment depends on the method adopted.

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However, technology's narrowing of focus may come at a cost of failing to see larger systemic contexts, alternatives and longer range consequences. Technological controls, presumably being scientific in nature, are justified as valid, objective, neutral, universal, consensual and fair. This view tends to overlook the fact that results need to be socially interpreted (and thus are potentially disputable) and to ignore the personal interests of control agents and the sectarian, socially constructed interests these agents may represent. Its legitimacy is strengthened in free market societies where the tactics can often be used by citizens (e.g., video cameras to record the behaviour or DNA analysis offered by a criminal defendant) and internally by police managers for protecting the guards.

However ideal a technical control system may appear in the abstract from the viewpoint of those advocating it, the world of application is often much messier and more complicated. Technological advancement is used by different professionals - scientists, psychologists, rehabilitation workers etc. It has been used as one among the interrogation methods and in successful management of the problems. Some of the interrogation methods in common use now, that resulted from technological and scientific advancement are narco-analysis tests or truth serum tests, brain mapping test and polygraph or lie detector test. Narco-analysis was rather unheard of in India till recently. However, it has lately surfaced as a new interrogation technique used by various investigative agencies in India.

In recent years the trend has leant heavily towards the use of such techniques for interrogation rather than following the traditional methods. To quote some examples, it was used in 2002 in the probe of the Godhra carnage (wherein several train passengers were burnt to death) and also the Telgi stamp paper case, which was made famous when Abdul Karim Telgi was subjected to the said test in December 2003 at a government hospital in Bangalore.

Recently the Kerala High Court directed the investigation officer in a case of alleged ragging and rape of a student at the School of Medical Education in Kottayam to subject all the accused as well as the victim to brain mapping and polygraph tests. Justice J. M. James issued the directive, while dismissing a writ petition seeking a Central Bureau of Investigation (CBI) inquiry into the case. The court ordered

that a report, along with the results of the tests, be filed before the magistrate concerned. The magistrate, at the time of committing the case, was to pass appropriate orders on the basis of the report. The court said the accused as well as the victim should cooperate with the investigation officer.

INTERROGATION METHODS

The different integration methods currently used in investigation include the nacro-analysis, brain mapping test (brain-wave finger printing) and polygraph (lie detector). Today these tests are increasingly employed by investigation agencies.

Narco-Analysis

In this test psychotherapy is conducted while the patient is in a sleep-like state induced by drugs, especially as a means of releasing repressed feelings, thoughts or memories. Its use is restricted to circumstances where there is a compelling, immediate need for a patient's responses.

Narco-analysis is not an extraneous method. It is developed on well based principles of bioscience. The principle involved in this is to take a person to a state of 'disinhibition' by using controlled dosages and rates of administration of sodium pentothal. The drug sodium pentothal binds GABA (a Neuro Transmitter Inhibitor) forming a complex at the B side which exerts control over the permeability of chloride ions into the neural membrane leading to the attainment of "the state of disinhibition". It has been established that this removes the barrier to disinhibition and it is difficult for anyone to lie at this stage. When a person is in this stage, the mind is assisted in rapidly exploring and identifying underlying conflicts, unresolved feelings about past events and information which cannot be revealed under conscious awareness. The reversal from this stage occurs quickly as soon as the dosage is stopped. The drug suppresses the person's reasoning power without affecting memory and speech; he/she can be made to tell the truth. The underlying theory is that a person is able to lie by using his/her imagination and in narco-analysis test, the subject's imagination is neutralised and reasoning faculty affected by making him/her semi-conscious. The subject is not in a position to speak out on his/her own but can answer specific and simple questions. In this state it becomes difficult for him/her to lie and his/her answers would

be restricted to facts he/she is already aware of. His/her answers are spontaneous as a semi-conscious person is unable to manipulate his/her answers.

Truth serum is no serum at all. It is drug sometimes used clinically. A few of the best known drugs used as truth serum are Seconal, Hyoscine (Scopolamine), Sodium Pentothal, Sodium Amytal and Phenobarbital. The most commonly used drug for the truth serum test is an anaesthetic and sedative drug, Sodium Pentothal which, when administered, can make a person respond to questions loquaciously. This drug combination is administered intravenously depending on the age, sex, health and physical condition of the subject and with the help of a physician, anaesthetist and a clinical/ forensic psychiatrist. The entire procedure is video recorded and attached to the report. There are many pre-test requirements that have to be confirmed before narco is administered. There has to be a request from the investigating officer and, in order to subject an accused to narco-analysis, permission from judicial court is also essential.

Brain Mapping Test

In this test, the accused is first interviewed and interrogated to find out whether he/she is concealing any information. Then sensors are attached to the subject's head and he/she is seated before a computer monitor. He/she is then shown certain images or made to hear certain sounds. The sensors monitor electrical activity in the brain and register P300 waves, which are generated only if the subject has some connection with the stimulus i.e. picture or sound. Thus the test matches information stored in the brain with information from the crime scene. Studies have shown that an innocent suspect's brain would not have stored or recorded certain information, which an actual perpetrator's brain would have stored. Also several different types of stimuli could be used to determine whether a subject was "information present" or "information absent" with respect to several different kinds of information.

Polygraph

It is the science of psychophysiology, which employs physiological measures to study and differentiate psychological processes. Polygraph is so called because it has many (poly) pens dedicated to recording (or graphing) a specific physiological function being measured.

Polygraphs, commonly called lie detectors, are instruments that monitor a person's physiological reactions. These instruments do not, as their name suggests, detect lies. They can only detect whether deceptive behaviour is being displayed. Lie detectors are used by investigation agencies in a wide variety of fields such as defence, secret services and terrorism as the veracity of statements cannot be taken at face value.

Polygraph testing combines interrogation with physiological measurements obtained from the use of polygraph instrument, a piece of equipment that records physiological phenomena—typically, respiration, heartbeat rate, blood pressure, and electro dermal response (electrical conductance at the skin surface). A polygraph examination includes a series of yes/no questions to which the examinee responds while connected to sensors that transmit data on these physiological phenomena by wire to the instrument, which uses analogue or digital technology to record the data. Because the original analogue instruments recorded the data with several pens writing lines on a moving sheet of paper, the record of physiological responses during the polygraph test is known as the polygraph chart. A variety of other technologies have been developed that purport to use physiological responses to make inferences about deceptiveness. These range from brain scans to analyses of voice tremors.

The ability of the polygraph test to detect deception also depends on other critical elements of the process. One is the interpretation of the polygraph chart, which involves the comparison of physiological responses to "relevant" questions and responses to other questions that are asked for the purpose of comparison. The second class of techniques, called "control question testing", compares responses to relevant questions with responses to other questions that are intended to generate physiological reactions even in non-deceptive examinees.

The third class of techniques is commonly called "guilty knowledge polygraph testing." This involves questions about details of an event under investigation that are known only to investigators and those who have direct knowledge of the event. Here, even the appropriateness of the name can be called to question as a client who responds with incorrect answers is not termed as 'guilty' in the true sense of the word. Even if he/she is concealing information he/she is not considered 'guilty.'

Thus compared with other tests, polygraph is widely used for interrogation in different contexts. Hence this paper focuses on and interprets its validity and reliability in different contexts and points out important areas that could be probed further by social scientists and pure scientists.

POLYGRAPH IN DIFFERENT CONTEXTS

Polygraph in Crime Investigation: More recently, police officials in India and a few other countries have turned to drugs for assistance in extracting confessions from accused persons, drugs which are presumed to relax the individual's defences to the point that he/she unknowingly reveals truths that he/she has been trying to conceal. This investigative technique, however humanitarian as an alternative to physical torture, still raises serious questions of individual rights and liberties.

Polygraph in Community Supervision of Sexual Offenders: It is widely promoted for application in cases of sexual abuse. The use of polygraph is accepted despite substantial differences in professional and scientific opinion about the validity of such tests. The test situation, however, is also used to induce the suspect to admit crimes. It is used to manage and identify similar acts during the rehabilitation phase among offenders, for treatment of offenders and also in preventing recidivism among the offenders.

Polygraph in Employment Screening: It is used for screening current employees, especially in security–sensitive occupations, who may have committed acts prohibited by their employer or by law. It is also used in pre-employment screening or pre-clearance screening of employees considered for new job assignments and to determine the potential of employee for future acts.

Polygraph in Judicial System: From the legal point of view the outcome is consistent with the intention of justice, according to which the accused cannot be considered guilty regardless of the 'true' nature of circumstance. This subjective value placed on two types of errors is determined both by the circumstances and by the ethical views of the person evaluating the circumstances. Therefore it is relevant to consider the implication of the distinction between false positives and false negative errors during interrogation. Although there are many

restrictions on the use of polygraph results in courts, they are often used to help direct and focused criminal investigations.

Though polygraph test serves as a research tool in studies measuring emotional responses to stress or observing the effects of drugs on physiological responses, the validity of psychological tests must be considered separately for different application of tests and populations (American Psychological Association, 1999). Sexual abuse cases where the polygraph is much used, is a very different offence compared with others, and the population is also different.

Polygraph is considered as one of the standardised psychometric devices, and yet it is unable to fulfil the requirements expected from a standardised testing tool. Perhaps the explanation for its continued use is that there is a mystique surrounding the polygraph test, that is, a culturally shared belief that the polygraph device is nearly infallible.

VALIDITY AND RELIABILITY OF POLYGRAPH

The problem with the use of the polygraph in detecting lies is that the method is not foolproof. An innocent subject may be very tense or may react emotionally to certain words in the questions and thus appear lying when telling the truth. A practised liar may show little emotional response when lying. These techniques have almost always included interviews and interrogations to try to see through deception and reveal what a deceiver will not freely admit. Due to the inherent high margin of error and the consequent potential for injustice, its use in courts has been criticised, but in less formal settings it is still advocated and in use.

For example, a special court dealing with cases under the Maharashtra Control of Organised Crime Act (MCOCA) in Pune allowed the Special Investigation Team (SIT) probing the multi-crore fake stamp paper scam to put Abdul Karim Telgi through an array of scientific tests, in order to aid investigation and facilitate the collection of evidence. The Karnataka Forensic Science Laboratory (KFSL) in Bangalore conducted polygraph tests, brain mapping and a narco-analysis procedure on Telgi on 20-22 December 2003. The narco-analysis tests yielded large amount of information but doubts were raised about its value as evidence. The use of drugs on Telgi in order to extract the truth created a controversy.

Often the polygraphic situation in which the test is performed is ignored by many examiners and needs to be focused on since it has different components. These include pre-test interview, administering test and post-test phase. Interpretation of physiological responses depends on the subjective and objective scoring pattern. The validity of these procedures remains an unresolved issue and estimates of accuracy range from chance to perfection.

Some authors (Cross and Saxe 1992; Iacono and Lykken 1997) are of the opinion that it is fallacious to assume that a person who is dishonest in a polygraph test will behave in other undesirable ways; hence perfect screening is not foolproof. Future behaviour can neither be predicted from an assessment of client's past behaviour, nor from the discovery of a 'lie' during a test.

Much of the research evidence is based on simulated situations and, for that very reason, the findings are of limited value. Even those which are based on actual cases are so situation specific that it may not be universally applicable. Hence it cannot be generalised. It depends on each independent interaction between the examiner and the subject. If a subject is convinced of the efficacy of the test, then it may be effective.

The test as such involves the interaction of the examiner with the examinee before, during and after the examination. The pre-test helps the examiner to learn about the subject's background and to influence the subject to believe in the test. The examiner will often quote high accuracy rates and conduct so-called stimulation test to demonstrate the power of the instrument. For example, the subject may pick up a number, and the examiner will determine which number the subject chose by looking at the polygraph tracings made when a series of numbers were presented to him/her. The 'stim test' is however based on psycho-physiological principles that are different from the standard polygraph test and is sometimes rigged (Lykken 1998). If an examiner believes that the subject is deceptive the subject will typically be interrogated at the conclusion of the test. In this post-test phase the examiner confronts him/her with the results and tries to elicit a confession. The subject may confess or reveal self-incriminating information during the pre-test or post-test questioning. False confessions have been acquired following polygraph-aided

interrogation and the examinee may provide false information to 'satisfy' the examiner. No systematic data are available on the frequency of such outcomes.

In addition, subject's nervousness, sense of morality, intelligence or psychopathy, as well as examiner training may also affect test results, and the test can be defeated. Perhaps the simplest countermeasure is to train people to believe that polygraph cannot detect them (i.e. examiner). Other countermeasures include movement in response to control questions and the use of drugs to blunt arousal.

The validity of the polygraph test is debatable and its results may be more of false positive errors than false negatives (Horvath 1977). The polygraph test has a very high rate of false positives, which means concluding that someone is lying when he/she is actually telling the truth (Quinsey and Lalumiere 1996). Moreover, the reliability and validity of the test is low, and the subject's behaviour and characteristics as well as experience of polygraph testers affect the accuracy of the results.

The objectivity of scientific knowledge resides in its being a social construct; its communal institutions, norms and activities, including the peer review system, are not just a background for the logic of the scientific method, but are constitutive of the Science as we know it. Peer review never guarantees validity and, being a human enterprise, cannot be free of error, any more than can polygraph tracings or digital readouts. The traditional control question is referred to as a probable lie (examiner believes that the person is lying about the issue).

The guilty knowledge test in polygraph is based on an entirely different theory (see e.g., Lykken 1998). In this, instead of identifying the deception, the test seeks to analyse whether the subject has a different physiological response to information that only a guilty party would have (e.g., victim's clothing when a crime is committed). Because of the difficulty in obtaining sufficient guilty knowledge in most situations and because of the concern on validity of these tests (Raskin *et al.* 1997) they are used infrequently.

In polygraph tests, conducted with the adolescent perpetrators and victims (Chambers 1994), developmental factors have not been adequately studied and it is difficult to say that the test is different with minors. Abrams (1975) suggested that children below the age of 11 are poor polygraph subjects and Matte (1996) argued that testing

child victims is inadvisable because it makes them relive traumatic events.

Another limitation of the polygraph test is that it should not be given to psychopaths, clients with major psychotic mental illnesses, delusions and below average intelligence, and to those with active symptoms of bipolar depression.

FACTORS AFFECTING LIE DETECTION ACCURACY

There are a number of factors that serve to moderate a receiver's deception accuracy. The factors that affect the lie detection are from the researcher's side as well as from the clients' side. There are three programmatic areas of research in the domain of lie detection research: receiver role, relational intimacy, and deception detection training. The professional, who uses the polygraph test, perceives his/her role as one that enables him/her to identify liars. Investigators, detectives and other personnel in the criminal justice system are better equipped with this methodology of investigation than lay people. This is not to say that the characteristic of a true liar cannot be identified. Some of the inbuilt capacity existing among the clients/persons that helps them and which can be noticed or examined by the investigator involves capacity of preparation, originality, quick thinking eloquence, memory, acting talent and lack of fear or guilt.

However, identification of an individual who is actively deceiving, especially in a quasi-clinical or judicial setting within the criminal justice system, is far from straightforward. The strategies, techniques and technologies that have evolved to facilitate and assist this process are not conducive to accommodate the diversity of individuals and their very particular physiological and psychological responses to anxiety provoking circumstances. Factors commonly thought of as indicative of lying (including both verbal and non-verbal indicators – generalisations, indirect answers, implausibility, scratching, hair touching, avoiding eye contact etc.), although sometimes observed in the liars when subjected to scrutiny, cannot consistently be demonstrated to be identified with deceitful individuals in general.

It is also important to recognise the role played by the evaluator's/examiner's attitude towards accepting errors and weighing these errors based on circumstances. Because the test is psychological in the sense of involving complex interview like interaction between examiner and

the examinee, any biases in the designing and administering of the test are likely to produce outcomes that are consistent with the biases.

Available evidence indicates that polygraph testing, intended to identify security risks and protect valued employees as currently used, has extremely serious limitations in screening applications. Given its level of accuracy, achieving a high probability of identifying individuals who pose major security risks in a population with a very low proportion of such individuals, would require setting up a very sensitive test. If this is done, there are chances that hundreds or thousands of innocent individuals would be implicated for every major security violator correctly identified. The only way to limit the frequency of 'false positives', is to administer the test in a manner that would severely limit the proportion of serious transgressors identified.

In a typical lie detector test the person being tested is first asked a series of neutral control questions to establish the baseline. These are simple questions. They are followed by questions that would indicate guilty-knowledge facts known only by the person tested. Unfortunately polygraphs are not fully reliable indicators of lying. It works on the assumption that polygraph identifies lies. It may however be mentioned that several other psycho-social factors such as anxiety, pain, joy, feeling of security etc., can also change physiological arousal. Individual variations also take place. People can also lie with it. Despite this, polygraphs are still used for lie detection.

HUMAN RIGHTS AND ETHICAL DIMENSION

There is little legal precedent on the issue of investigative test like polygraph or narco-analysis in India. However, the legal position of applying this technique as an investigative aid raises genuine questions on the issue of encroachment on individual rights, liberties and freedom, and subjecting the accused to undergo the test as done by the investigative agencies in India.

It is a blatant violation of Article 20 (3) of the Constitution of India which states that 'no person accused of any offence shall be compelled to be witness against himself'. No person not even the accused himself/herself can be compelled to answer any question which may tend to prove him/her guilty of a crime he/she has been accused of. Thus the question of its admissibility as a scientific technique in investigation and its ultimate admissibility in court as forensic evidence still remains to be dealt with.

National Human Rights Commission (NHRC) has drafted guidelines in the administration of polygraph tests on the accused/ suspect and they are as follows:

1. No lie detection tests should be administered except on the basis of consent of the accused. An option should be given to the accused whether he/she wishes and avails such test.
2. If the accused volunteers for the detector test he/she should be given access to a lawyer, and the physical emotional and legal implication of such a test should be explained to him/her by the police and his/her lawyer.
3. The consent should be recorded before a judicial magistrate.
4. During the hearing before the magistrate the person alleged to have agreed should be duly represented by a lawyer.
5. At the hearing the person in question should also be told in clear terms that the statement that is made shall not be a 'confessional' statement to the magistrate but will have the status of a statement made to the police.
6. The magistrate shall consider all factors relating to the detention including the length of detention and the nature of the interrogation.
7. The actual recording of the lie detector test shall be done in an independent agency (such as a hospital) and conducted in the presence of a lawyer.
8. A full medical and factual narration of the manner of the information received must be taken on record.

Some of the accused/victims in criminal cases have objected to subjecting them to such tests and appealed against it in the court of law in India. For example, in the famous Arun Bhatt kidnapping case in Gujarat the accused appealed to the NHRC and the Supreme Court against undergoing the narco-analysis test and the appeal was accepted. Another example is that of the victim of the Suryanelli sex scandal case in Kerala who approached the Kerala High Court seeking to direct the CBI not to harass her under the guise of interrogation in connection with the investigation of the Sr. Abhaya murder case and not to subject her to polygraph test or any other test against her will in order to secure

the ends of justice. On 18 July 2002, the Kerala High Court directed the CBI officer investigating the case to proceed with further investigation on the basis of the information contained in a letter presented in a sealed cover by Deseeya Aikyavedi, Pala and not to subject the victim to polygraph tests.

SOCIAL DIMENSION OF POLYGRAPH

Social science is interested in exploring the relations among conceptual variables and in goal oriented empirical theory of ethics. The relations among different conceptual variables are studied through the presence of some traits or indicators reflecting the construct under examination. The social scientist objective is to explore a model of 'variables' that reflects relationship between the ethics-related dependents (corruption) and causal variables (education/ narratives of past experiences). Such a goal oriented theory ultimately seeks the empirical considerations of such propositions along with other social factors. Information obtained serves the objective for the social science analyst.

In methods like polygraph, information is sought by using different tests and techniques as mentioned above. But their limitation is that people are confined to tests alone without taking into consideration other sources like inbuilt potential, mental capacity, experience etc. From the point of view of the victims/ persons charged with crimes, they also develop a mental framework that they have to accept those procedures to prove their innocence. They are mentally subjected to accepting a test that violates their right to silence. To some extent this method is more humanitarian than the third-degree-physical torture adopted by various investigative agencies in criminal proceedings.

Thus, in due course, in the presence of scientific investigative process, the psychological and social dimensions are often ignored or given less importance in probing and exploring the socially constrained variables. The inbuilt capacity or potential/ abilities, totalitarian thinking to further the investigative process are hampered due to overdependence on such scientific methods of investigation. Often the contextual phenomenon, like social support mechanisms, personality structure, background/ symptoms of the deceit, cultural/developmental

factors, is left unexplored and even if explored is rarely considered in the final decision.

As a social being, the basic need is pursued by the need for good human relationships and companionship. The constantly reiterated suggestion of one's guilt urges one toward confession. As a suffering individual he/she is blackmailed by an inner need to be left alone and undisturbed, if only for a few minutes. From within and without he/she is inexorably driven toward signing the confession prepared by his/her persecutors. Why should he/she resist any longer? There are no visible witnesses; he/she cannot prove his/her moral courage and rectitude after his/her death. The core of the strategy of menticide is taking away all hope, all anticipation, all belief in a future. It destroys the very elements which keep the mind alive. The victim is utterly alone.

P. Chandrasekaran, forensic scientist said: "While identifying and isolating the 'Noida Killer' from society is a must, subjecting them to narco-analysis test is nothing but *rape of their mind*" (Hindu 2007). Sekharan, former director of the Forensic Sciences Department, Tamilnadu added that the test on the killers was bound to mislead the police and put them on the wrong track of investigation. It was a well-tested and documented fact that inveterate criminal psychopaths would lie under the influence of drugs, and even the relatively normal and well adjusted individuals might also successfully disguise the factual data. Even under the best conditions, these tests could result in an output contaminated by deception, fantasy and garbled speech.

There are a few studies conducted on detecting a victim in relation to social constructs and the most important ones are mentioned here. One aspect of the subject that has the potential to affect the result of the test, which has received considerable attention, is the effect of the level of socialisation and psychopathy on detectability. In a series of studies by Waid and his colleagues (Waid *et al.* 1979) significant relationships were found in the laboratory between socialisation and autonomic responsiveness. An initial finding was that college students who scored low on socialisation (on a standard psychological inventory) gave smaller electrodermal responses (EDRs) to stimuli than did high scoring subjects. In a more directly relevant investigation, a group of college students were asked to deceive or not to deceive a professional polygraph examiner. Results indicated that subjects who were not

detectable were significantly less socialised than those who were detectable. Susceptibility to detection seemed to be mediated by socialisation; results indicated that low socialisation subjects showed reduced EDRs. Highly socialised subjects were more responsive electrodermally, and as a result, several of them were misclassified as deceptive.

Response bias continues to be the most frequently cited criticism in personality testing for personal selection. Social desirability is in fact related to real individual differences in emotional stability and conscientiousness. Social desirability functions as a predictor for a variety of criteria, as a suppressor or as a mediator. Psychologists criticise the scales that are used to detect lies (social desirability scales) during employment, because much energy has been directed towards control of acquiescence and social desirability especially in industrial-organisational research and practice. Social desirable responding has been treated as evidence of contamination since the response might be due to some other factors (Zerbe and Paulhus 1999). But some authors state that social desirability is related to individual differences and personality.

Individuals who are high in educational qualification, high in cognitive abilities are presumed to have better test taking skills (are test smart) and hence can respond to personality tests with more distortion.

Cultural routinisation and habit formation by local rules and myths make of everybody a partial automation. National and racial prejudices are acted out unwittingly. Group hatred often bursts out almost automatically when triggered by slogans and catchwords. In a totalitarian world, this narrow disciplinarian conditioning is done more "perfectly" and more "ad absurdum" and all these factors affect the response pattern.

According to theories of emotion, we tend to think of bodily changes such as those in response to stress as being caused by emotion. The earliest theories of emotion imply that emotional change induces physiological changes. The important factor in our felt emotion is the feedback from the bodily changes that occur in response to a frightening or upsetting situation. Since these physiological responses has a bearing in detecting lies the causes underlying the emotional changes in relation to polygraph test should be explored further.

There is a very serious social danger in all the methods of chemical intrusion into the mind. True, they can be used as a careful aid to psychotherapy, but they can also be frightening instruments of control in the hands of people with an overwhelming drive to power. This will even result in anti social behaviour by the client/subject in the future. The other social variables that play a vital role in influencing the administration and testing process are the need for companionship and situational contexts.

The Need for Companionship

The need for companionship is one among the many variables which makes a person to accept the administration of a test like polygraph, even yield to certain conclusions and admit the crime/deception. Not enough attention has been given to the psychology of loneliness, especially to the implications of enforced isolation of prisoners. When the sensory stimuli of everyday life are removed, human being's entire personality may change. Social intercourse, our continual contact with colleagues, our work, the newspaper, voices, traffic, our loved ones and even those we don't like – all are daily nourishment for our senses and minds. We select what we find interesting and reject what we do not want to absorb. Everyday, every person lives in many small worlds of exchange of gratifications, little hatreds, pleasant experiences, irritation and delights. And one needs stimuli to keep oneself on the alert. Hour by hour, reality, in cooperation with our memory, integrates the million of facts in our lives by repeating them over and over. Thus social and physical stimulations are essential in predicting any behaviour of an individual.

As soon as a person is alone closed off from the world and from the news of what is going on, his/her mental activity is replaced by quite different processes. Long forgotten anxieties come to the surface and long-repressed memories knock on his/her mind from inside. Some experiments have shown that people who are deprived, for even a very short time, of all sensory stimuli (no touch, no hearing, no smell, no light) quickly fall into a kind of hallucinatory hypnotic state. Isolation from the multitude of impressions that normally bombard us from the outside world creates strange and frightening symptoms.

The prisoner kept in isolation, although his/her isolation is by no means as extreme as in the laboratory tests, also undergoes a severe

mental change. His/her guards and inquisitors become more and more his/her only source of contact with reality – those stimuli he/she needs even more than bread. He/she develops a peculiar submissive relation with them. The test situation which is administered in isolation makes the individual to accept the crime and also to avoid isolation further. This supports the phrase of sociologists that "Man is a Social Animal". Therefore it can be concluded that for acceptance and companionship with others, an individual may confess/ admit the crime irrespective of his/her deeds.

Situational Influences in Pre-Employment Screening

Psychologists have long recognised that behaviour is determined by both internal and external factors. Workplace deviance can be controlled, in part, by situational factors. Workplaces can and should be designed to support good citizenship and to deter behaviours that damage the organisation or other employees.

There are situational influences exerted on employees, which are external to the workplace and beyond the employer's control. Internal and external situational influences combine with personality traits to determine behaviour. Some investigation of external influences alongside measures of personality is, therefore, also pertinent to employee screening. While analysing the situations in administering tests, stern reality confronts us with the universal mental battle between thought control (and its corollaries) and our standards of decency, personal strength, personal ideas and a personal conscience with autonomy and dignity. These factors again affect the validity of the screening.

References and other forms of checks are often undertaken in pre-employment vetting. However, the reliability and validity of these aspects of pre-employment screening for predicting honesty or integrity in the workplace remains unclear.

Even if valid and reliable measures of integrity, either overt or indirect, have been or can be developed, the question remains whether such measures would be able to detect the most extreme and damaging forms of workplace deviance that are becoming more prominent today. For example, leaks of classified information and acts of violence with the aid of insiders appear to be on the increase. In response, security professionals may be tempted to resort to the polygraph test in the

hope that it can screen out people who have the potential to engage in these destructive acts. However, the evidence reviewed does not support such a use of the polygraph. And where acts are motivated by strong moral, political or religious beliefs (as with both whistleblowers and terrorists) it is unlikely that any measure of integrity would be useful in identifying potential perpetrators.

Polygraph Test in Probation of Sexual Offenders

Encouraging disclosure of information is an essential task of probation intervention and that too with sexual offenders. In probation, assessment of the offender is an ongoing process that both probation officers and treatment providers must undertake because of the fact that assessment results at the beginning of supervision may be inaccurate 3-6 months later, especially if social support and environment conditions change. Key concepts in treatment assessments include deviant sexual preferences, history of sexual offence and polygraph testing, psychopathy, risk of sexual recidivism using formal risk assessments, change in risk of sexual recidivism, denial, cognitive distortions and empathy.

Polygraph can be helpful in the assessment of sexual offenders during their treatment. Professionals can use this tool to acquire more comprehensive information about the crime and behaviour of the client. It can also be used as a tool for discussion and diagnosis of the case further. The results of polygraph test should be used as a tool to encourage an open discussion between the client and the professional.

Denial is considered as one of the key components in assessment, and confrontation with the truth does not necessarily impact on the reasons for denial. It may not be easy to formulate an account of what took place with which the offender and practitioner can both agree. Denial is an understanding response to addressing difficult and painful material. It is important to consider what function denial performs for the individual who may have severe difficulty within his/her relationship to reality and be employing it as an unconscious defence against despair, suicide or psychotic breakdown. Polygraph can be an aid in this context. The polygraph examination suggests the denial of the boundaries between internal and external worlds reminiscent of the denial of boundaries implicit in the act of sexual offence. The confident identification of 'the truth' smacks of a sense of omnipotence

in which the separateness of the internal world of offender is denied along with the reality, as professionals are limited in meeting the public's expectations of protection from harm.

Establishing truth through external means has the potential to polarise interactions into watertight compartments—'truth' and 'lies' in a denial of the complexities of perceptions in-between. In this context the worlds of the offender no longer seem important - *we will establish truth.*

Psychoanalytic theorists (Jacques 1955; Menzies 1988, 1989; Obholzer and Roberts 1994) have offered ways of understanding how social systems such as communities and organisations respond to anxiety through defensive psychic processes such as splitting and projective identification. Unacceptable 'bad' aspects of ourselves are unconsciously split off and projected into others where they can be attacked; therefore these become not only the faults perceived in the recipients but unconsciously projected perceived faults of the attackers. The resultant division between 'good' and 'bad' can lead to scapegoating with the scapegoated group containing 'badness' leaving the goodness perceived in the attackers. Such phenomenon reflects the public opinion.

Similarly this psychodynamic theory has offered a way of understanding the process in which the professional groups receive the unconscious projections of their client groups and begin to operate in ways which mirror or re-enact abusive dynamics short-circuiting creative thoughts (Kraemer 1987; Kahn 1979). This process is compounded by the difficulties in processing the powerful (counter-transference) feelings aroused by workers, particularly by such a client group. The potential result is finally 'acting out' rather than 'reflection', from which persecutive policies and punitive working practices arise (Sampson 1994; Sheath 1990). It is further suggested that there is a sort of reciprocal pathology in the scapegoated group, which allows the persecution to take place, binding persecutor and persecuted in a kind of cyclical process (Jacques 1955). Hence the investigator working with the probation of sexual offenders should have knowledge on the system in which the society is functioning, psychological aspects of crime and in depth information about the client group to make the findings of polygraph test effective.

Study by Sampson (1994) shows that probation workers are able to get information about index offences, further disclosure on the past offending and more information about short-term risk and non-compliance with conditions of probation orders through the use of polygraph testing. But still there are reported criticisms from sociologists and psychologists in the area of accuracy, reliability and utility of polygraph, as well as discussion on the implications of future practice.

Also, there remains the issue of the ethical implications of such testing, the context (statutory or voluntary) within which it could take place and the civil rights of the offender. From the rehabilitation point of view the results of polygraph are less important than the additional information that can be elicited from the sex offender with appropriate use of the polygraph tool.

Traditional methods like probation and supervision have relied upon the development of a trusting relationship between the probation worker and offender within which the potential for changing behaviour could be explored. This process involved the development and strengthening of an offender's internal resources and inhibitors to offending. As with all types of human service intervention, probation work is more effective when the client is engaged in a positive rapport that demands mental trust and probation worker pursues an ethical imperative to seek rehabilitation and reintegration of the offender back into society, if at all possible (Cox and Pritchard 1997). Offenders can be difficult to engage and this is compounded by the process. The possibilities for the judicial use of polygraph tests for helping this process of engaging the offender in a constructive manner need to be explored in improving probation treatment of sexual offenders.

External Controls and Recidivism

Overtly, a persecutive system of justice increases susceptibility to the experience of persecution and risk of re-offending increases. A model of supervision which attempts to demonstrate an understanding of people in all their complexities and facets is the means of facilitating the development of such inhibitions internally and perhaps achieving more permanent and reliable change.

Polygraph usage is considered as one among external constraints. At the core of this issue, sex offending is difficult to think about and talk about in its complexities, even as far as understanding the feelings

of the offenders involved. This leads to lack of confidence in risk assessment and defensive measures. It is the creative engagement of offenders in supervision in a context of thoughtfulness and using a range of skills that has the greatest potential for achieving internal change through which reduction of risk could be sustained long term.

Behaviours in general are the outcome of felt emotions and the inferred physiological behaviour in polygraph deduction may also be due to emotions. Thus, results are the outcome of such 'agents of contamination' which are likely from the personality type, psychology of behaviour, socialisation process, cultural differences, treatment, social desirability, social support and culture, situational and environmental influences etc. Hence all these dimensions like social, psychological, legal and ethical aspects should be integrated into the scientific deduction and prediction because of their indirect influence and interrelation among themselves. If not, the inferred results will be biased due to such contamination.

CHALLENGES IN USING POLYGRAPH

Based on the above discussion the following challenging areas are derived that need to be addressed by the social scientists and pure scientists.

➢ The findings are based on assumption whereby detection is done by comparing the responses between control and relevant questions which also needs to be integrated with other physiological, psychological and social aspects. In screening context it includes related questions in a security screening context, but some analysts believe that such questions, because they do not refer to specific past events, are more similar to comparison questions that are the related questions that can be asked in an event-specific investigation. For this reason, it has been argued that it is inherently more difficult to discriminate between deception and truthfulness, in a screening context.

➢ Polygraph testing creates a test situation in which examinees are psychologically pressured to confess or provide self-incriminating information. The resultant physical responses may be due to felt anxiety as well. It is assumed that innocent persons will lie in response to control questions or will be very concerned with whether they will be seen as truthful. Their primary fear, it is thought, will be failing the test because of their response to the control questions. The theory

underlying the CQT is implausible. Further models should be added in the investigation part integrating other latent variables.

➢ Our limited understanding of the concepts of truthfulness and honesty, as well as our lack of knowledge about emotional expression may affect our responses to polygraph testing. So far, little research has been done in this area and, in the present situation, the innocent may be wrongly declared guilty.

➢ Professionals who work with children have contradictory views on the use of polygraph testing with alleged perpetrators (Corwin 1988; Faller 1997) and their use with alleged victims of abuse has also been criticised (Sloan 1995). But some professionals who work with or study sexual offenders recommend use of polygraph test in treatment and probation programmes. The child developmental issues, their developmental tasks and needs should be considered. The potential effects of cognitive distortion of any offender also raise concerns. The difficulty in developing suitable control questions on the offence of sexual abuse raises questions on integration of other aspects of human behaviour.

➢ Pre-employment screening, as different from the testing of persons suspected of involvement in criminal activities, is not only different in the form and purpose but also raises a number of difficult and distinctive legal, ethical, moral and social issues. The necessity to responsibly discuss them heightens our concern. Use of polygraph test in employment may be an organisational crutch by which the organisation feels that 'we have taken care of that' whereas in reality civil rights are violated, trust is broken, and employment screening is inadequate due to reliance on this demonstrably unreliable methodology (Pink and Kotzen 1986).

➢ Accuracy of testing depends on how far the practical experience in the field is integrated by the examiner. Hence this challenges the experience, knowledge and potential of the examiner to interpret the findings with accuracy. Also the practical and ethical dimension for the purpose of ethical disclosure should be given due consideration while using polygraph.

➢ Mechanisms in the legal system that are designed to test the veracity of evidence need to be considered by the examiner.

Relationship between civil liberties and certain aspects of polygraph testing presents a legal challenge; but there seems to be no case law to support this point of view. The non- deceptive will be less concerned about the questions regarding the criminal charge, which they know they are telling the truth about, and more concerned about, their previous life.

➢ Polygraph results are not related to substantiation by physical and mental health professionals. There is a need to test this hypothesis, i.e. to relate the polygraph test results with ethical outcomes in different cultures. Because of this reason there is evidence that managers in UK believe less in ethics since it affects the organisation culture (Robertson and Schlegelmilch 1993).

➢ The importance of the psychology of loneliness in relation to social desirability, personality structure, ethical and other aspects involved in polygraph should be considered and studied by the scientists.

To conclude, the validity and reliability of the instruments or interrogation methods adopted in polygraph test rely not only on the scientific aspects of the machine but also on the social, psychological and legal aspects. This is due to the fact that the factors discussed above are closely interrelated and dependent on each other.

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