

## **Sensation & Perception: On the Concept of Lie Detection**

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### Part 1

1) Summarize what you believe to be the three biggest events in the history of lie detection (pp 357-364)

Is there an empirical test that can determine when someone is lying? It depends on who you ask. According to the American Psychological Association (APA), there has been no solid evidence showing that certain physiological responses are linked with deception (APA, 2004). Yet proponents of the validity of lie detection claim the opposite. Using various instruments that measure physical reactions such as pulse, pupil dilation, breathing rate, and, sweat production, they propose that when given the chance, a liar's own body will betray them through involuntary actions that can be observed according to the scientific method.

Historically lie detection practices have ranged from borderline scientific to outright ignorance. The article *Lie Detection and the Polygraph: A Historical Review* details some of the earliest documented forms of lie detection to the more scientifically inclined practices we see today. One of the earlier important events can be ascribed to Daniel Defoe's essay in 1730 linking guilt and fear to changes in pulse. His ideas led to later experiments like Lombroso's measurements of blood pressure during the interrogation of criminals and conclusions that changes in breathing rate, blood pressure, and pulse could be attributed to lying. (Grubin & Madsen, 2005).

The next major important development would be William Marson advocating for courts to use his version of lie detector in the criminal case of James Frye. His detector was deemed non-usable for determinations of guilt because of insufficient scientific proof. As a result, courts adopted the "Frye standard" which became the test of whether evidence met the requirements of

the scientific method (Grubin & Madsen). The third most important event was the invention of the modern polygraph by John Larson. His device recorded readings of pulse, respiration, and blood pressure simultaneously. His invention would be used as inspiration for most other machines and techniques that would follow later on and through today (Grubin & Madsen).

2) Two part question: What are the primary post-conviction uses of the polygraph and what is the current status of the polygraph (with regard to the difference between the proponents and advocates of using polygraphs).

When most people think of the uses of polygraphs, post-conviction situations might not immediately come to mind. However, instruments of lie detection are used in certain settings beyond criminal proceedings. In the 1970s polygraphs were found useful for monitoring the behaviors of probationers to reduce recidivism rates (Grubin & Madsen). Lie detectors as a monitoring tool have also been used in therapeutic settings on sex offenders to determine adherence to the conditions of supervision and the truthfulness in disclosures of thoughts and behaviors (Grubin & Madsen).

As of 2005 when this article was published, the use of the polygraph was widespread throughout the US and around the world. Law agencies deemed it useful in criminal investigations, the US government has used it for screening applicants, and private sector entities found it beneficial for investigating losses and security issues (Grubin & Masden). Proponents of the polygraph held instruments of lie detection to be an indispensable tool helping to solve and prevent crimes. Critics did not feel the same, largely dismissing lie detection as a pseudo-science gimmick that likely criminalized innocent people. The most prominent disagreements arose from

beliefs about the utilization of the unproven validity of the polygraph in criminal investigations and not regarding its use in treatment settings (Grubin & Masden).

3) Having read the article, elaborate on your opinions about the effectiveness of the polygraph for lie detection. Do you think it should be used? Why or why not?

After reading the article, I remain skeptical about the polygraph as an accurate measure of truthfulness. I know that emotions can lead to changes in physical functioning but the fact that the supposed telltale signs of deception are common in stressful situations and regular symptoms experienced by people with anxiety or other forms of neurodivergence is enough for me to dismiss the idea that the polygraph is a fail-safe means of detecting lies. The mind is not one track either. The brain can process different thoughts and emotions from varying times and hypotheticals simultaneously and often unconsciously. Is it not possible that a question asked during an interrogation can trigger other thoughts from elsewhere inside the memory and could those triggered memories not lead to emotional responses that can also affect the physical state of the body? Perhaps the changes in pulse, breathing, or perspirations are not in response to the questions being asked but due to the recollection of something else stored in the brain from some other situation entirely. As I am slightly aware of the complexities of the human mind, I cannot advocate for the use of polygraphs for criminal prosecution because it is not possible in a typical polygraph session to know what question, memory, or stimulus a brain is actually responding to.

When utilized in a treatment setting with a licensed psychologist, I could see how the polygraph could be a useful tool when working with people who might repress or purposely conceal thoughts and emotions. As a therapeutic instrument, it probably does have some utility when being used to help the therapist and client both understand why specific topics or questions elicit a stress response and what can be done to address the reasons behind it.

## PART 2

4) Summarize three pieces of information regarding the history of lie detection in this article that you did not already learn from the previous article.

In the opening sections of *Pitfalls and Opportunities in Nonverbal Verbal Lie Detection*, there are several mentions of past events relating to lie detection. In 1969, Ekman and Friesen coined the terms leakage and deception cues to describe the involuntary changes in body movements and facial expressions people tend to exhibit while participating in deceit (Ekman & Friesen, 1969/2016). In 1981 research conducted by Zuckerman and team introduced the *Four Factor Theory* of deception, or multifactor model (Vrij et al., 2010), which suggested that deception can be understood through an examination of emotions, behavior, and the mental processes behind them.

According to Zuckerman, deception has four main factors: arousal, anxious or guilty feelings, cognitive processes, and conscious attempts to appear truthful all of which increase cognitive load and can ultimately lead to lie detection (Wałyczyk et al., 2013). A 2010 study found that different areas of the brain are activated depending on whether a lie had been rehearsed or not as did the level of interest or personal opinion a person has towards a specific topic (Vrij et al.). Studies such as these have importance because they showed how intricate and complex the process of lying actually is.

5) Describe three pitfalls of lie detection that you think are most concerning in regard to its validity.

Regardless of some of the correlations that some have said to be associated with lying, there are many concerns about the validity of polygraphs and the concept of lie detection. Raising the most flags is the fact that behaviors typically associated with lying are also exhibited in people who are not lying (Vrij et al.). Personalities add another layer of difficulty. While lying may lead to marked nervousness in some, there are many others who are actually good at it and perhaps make a skill of it. There are some groups of people who may not process emotions like guilt or shame as assumed and some do not feel empathy and lack remorse. The telltale signs of anxiousness that assessors might expect to see in a typical person would not be so easily observed in these groups (Vrij et al.). More sophisticated liars are adept at “reading the room” which allows them to employ useful countermeasures such as intentional gaze and minimizing grooming gestures to appear more trustworthy (Vrij et al.). There are methods to obscure lies when speaking too. Lies are usually hidden within larger frames of truth making the lie harder to discern where the lie begins. There are so many variables and contradictions in the presentations of behavior alone that cut deep into the idea that there can be a one size fits all approach to detecting lies.

6) Of the various common errors made by lie detectors, describe the three that you believe to be most disturbing.

With the pitfalls just mentioned, it is common for lie detectors to wrongfully ascribe guilt to people based on incorrect notions of what a guilty person looks like (Vrij et al.). The most disturbing aspect of this is the enforcement of stereotypes regarding the presentations of guilty persons in police manuals that have been proven inaccurate as measures of deception yet are still

believed and used against people in their custody (Vrij et al.). Tendencies towards confirmation bias and belief perseverance interfere with the ability of lie detectors to remain partial and can inhibit an accurate review of evidence (Vrij et al.). Personal opinions and/or agendas of the assessor can easily influence the type of approach used during detection which can lead to false confessions in confused or intimidated interviewees. The lack of respect for inter/intrapersonal differences is also deeply concerning. Lie detectors can fail to appreciate variations in social behaviors across different types of people and cultures causing them to wrongly label innocent people as behaving in deceptive manners because they don't fit a predetermined standard of behaviors associated with people who appear more honest (Vrij et al.).

7) Summarize three of the opportunities for lie detection you find most promising for the future.

However difficult to overcome the known issues, being aware of current errors and past mistakes leads to the development of better-informed processes. The most important area is raising awareness amongst the law enforcement and judicial community about the psychological determinants of behavior in both criminals and the general population. Studies such as those conducted by Mann et al. as mentioned in the article, were able to showcase the fallibility of relying heavily on nonverbal cues. With the knowledge that liars typically rehearse their stories and think in rigid chronological order (Vrij), methods that utilize the element of surprise with lines of questioning that a liar might not have been able to prepare for such as having to draw specific details of a location had promising rates of success (Vrij). Going further into the realm of lying and how it increases cognitive load will lead also to better approaches to lie detection.

As more is understood about the psychology of deception it will continue to lead to improvements in the interrogation processes

8) Having read this article, elaborate on your opinions about the effectiveness of techniques used for lie detection. Do you still agree with the conclusions that you made in Question 3 (above)? Explain why or why not.

At the conclusion of this article, I still have the same concerns as I know there are still many people, particularly those in authoritative positions, deeply committed to long-held beliefs that supposedly outline the expected behaviors of people who aren't being truthful. In a nation where there has been an overwhelming expression of ethnocentrism, distrust of others has likely been exacerbated by these entities that have possessed an overconfidence in their abilities to morally judge the character of others using faulty scientific instruments and unreliable methods to do so. This article did go into more detail about issues I brought up particularly how lie detectors often fail to appreciate variations in conduct seen in people with nontypical personalities who might naturally display behavioral traits that are associated with lying or should be expected to be seen when people are under the influence of stress so that was appreciated.

When discussing the pitfalls and errors in lie detection, this author mentioned how no chance for feedback was a major issue. That is why I said that I could see the value of using lie detection in therapeutic settings because there would likely be a chance for all involved to discuss the details surrounding lies in greater depth and more of a likelihood for an interviewer to gain a better understanding of whether their discernment is accurate.



Another realm of concern focused on the complexities of lying as a complex psychological process which I did attempt to describe though in a slightly different context. Here the aspects of brain activity and cognitive load were discussed with overall respect to how they occur during intentional acts of deceit rather than how emotional triggers might lead to changes in physiological functions and behaviors that could affect polygraph results. Between the previous article and the latter, there was a clear transformation in the types of research mentioned indicating the move away from the reliance on catching liars by measuring simple things like blood pressure, heart rate, or whether a person can maintain a gaze for a supposed appropriate length of time towards the entirety of operations taking place in the mind which is a much more valid approach considering how entirely complicated human behaviors are and can become.

### **PART 3 (COMPARE AND CONTRAST)**

9) Describe three pieces of information (ideas) that the authors of two journal articles have in common.

While not entirely scientific, both articles reference the Fall of Man, as the first act of defiance and deceit that took place when Eve was coerced into eating the forbidden fruit. In further discussing the history of lies both also went into brief summaries of methods earlier societies used for lie detection such as chewing rice powder, trial by ordeal, and ideas about changes in body functions like heart rate, perspiration, or breathing (Grubin & Madsen, Vrij et al.). Both discuss those methods in regard to the historical aspects of lie detection to show how people have been interested in the ability to catch and punish liars since the beginning of time and how earlier attempts in lie detection have led to studies taking place more recently. In both

analyses, the authors openly discuss past and current issues with lie detection providing details as to why there have been problems with certain methods of lie detection and why discovering a one size fits all situations method has not been achievable.

10) Describe two pieces of information that the authors of two journal articles disagree on. In other words, describe two ideas that were found in one of the journal articles but not in the other.

Though both articles have some shared ideas, there are a couple of noticeable differences. *Lie Detection and the Polygraph: A Historical Review* was written by Grubin and Madsen five years before Vrij et al. published *Pitfalls and Opportunities in Nonverbal and Verbal Lie Detection* likely using information that was much more dated. The first article talked heavily about detecting lies through observations of nonverbal cues and involuntary body changes while the author of the second article gave multiple examples to refute the reliability of such methods. Grubin and Madsen spoke favorably of the polygraph while Vrij and colleagues expressed doubt about its lack of accuracy or empirical proof.

#### **PART 4**

11) *Frequent Countermeasure Usage by Narcissistic Examinees in the Concealed Information Test*

12) Briefly describe the journal article. Include in your description 1) the hypothes(es) being investigated by the researchers, 2) the type of research

participants (subjects) used, 3) the research method employed by the researchers, 4) the most important result of the study, and 6) the final conclusion drawn by the researchers.

The article *Frequent Countermeasure Usage by Narcissistic Examinees in the Concealed Information Test* authored by Eitan Elaad and Liza Zvi examines the relationship between subjects meeting diagnostic criteria for narcissism and the usage of countermeasures in the process of deception. The research hypothesis asserted that people who have traits of narcissism are more likely to use countermeasures to appear truthful when lying. To test this assumption, researchers recruited 241 introductory psychology students ( $N=241$ ) from an Israeli university with a mean age of 22.6 ( $SD=2.4$ ).

The study was set up as a mock murder scenario with a 2x2 factorial design and 4 experimental conditions. Participants were screened for narcissistic traits using the Narcissistic Personality Inventory (NPI) and answered other inventories assessing their beliefs on their abilities to lie or detect lies in others then assigned to a condition. For the experiments, participants were asked to either conceal information from others or respond truthfully. Participants were administered the Concealed Information Test (CIT) polygraph and afterward were asked to respond to questions regarding guilt, excitement, and perceived success. Examinees were observed throughout the experiment for changes in physiological functioning and alterations in verbal and nonverbal cues.

The results of the study did show a positive correlation between traits of narcissism and higher use of countermeasures when lying. The study was also able to show that overall high NPI scores correlate with self-assessments of lie-detecting, truth-telling, and perceived abilities

to deceive (Elaad & Zvi). Measures of physiological changes among groups showed no significance.

13) How does the information in this journal article (that you found) provide new or different information than what was presented in the two journal articles that I provided for you to read?

While all three articles focused on elements of deception, this particular study was interested the relationship between high countermeasure attempts and narcissists. In the previous articles, countermeasures were briefly mentioned but detailed explanations were not given. Countermeasures, as discussed here, were shown as well thought manipulations of personal behaviors and thoughts and can also include attempts to interfere with lie detection instruments (Elaad & Zvi) doing much more than just trying to calm anxious movements.

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