PSYC 3305 Semester Project

Savannah L Holloway

Department of Psychology , University of Arkansas at Little Rock

PSYC 3305 Semester Project

Part 1

Read the article "Lie detection and the polygraph: A historical Review" by DON GRUBIN &

LARS MADSEN, 2005.

Analysis Questions

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

357-364).

> (1) The first event I find to be significant is William Marston's 1915 development of one
>
> of the first lie detectors - the "systolic blood pressure deception test". His discovery of the
>
> connection between changes in blood pressure and deception would influence later
>
> polygraph designs. (2) The second event I find to be significant is the adoption of the
>
> "Frye Standard" in 1923. Marston used his lie detector in the criminal proceedings of
>
> James Frye, who claimed he gave a false confession. Marston's machine determined Frye
>
> was telling the truth, but the results were not allowed into evidence on the grounds that
>
> the lie detector did not have enough scientific support. "The 'Frye standard' ... became
>
> the test for the admissibility of scientific evidence in the US, and remained a significant
>
> barrier to the inclusion of polygraph evidence in American courtrooms for the next 70
>
> years." (Grubin & Madsen, 2005, p. 360) (3) The third event I find to be significant is the
>
> development of the first modern polygraph by John Larson in 1921. His polygraph
>
> recorded blood pressure, pulse rate, and respiration simultaneously on paper. This gave
>
> the polygraph its name.

2) Two-part question: What are the primary post-conviction uses of the polygraph (pp 364-366) and what is the current status of the polygraph (with regard to the difference between the proponents and advocates of using polygraphs). (pp 366-367).

(1) The primary post-conviction uses for the polygraph are the supervision and management of probationers and sex offender treatment programs. Some argue that regular polygraph testing can deter offenders from breaking probation. It can also determine if they have already re-offended. Within sex offender programs, the polygraph has pushed past offenders to confess valuable information pertaining to victims, the beginning of their sexually deviant behavior, their current sexually deviant thoughts, and whether they are putting themselves in high-risk situations. These confessions could help treat and modify dangerous behavior in sex offenders.

(2) The polygraph is widely used within the United States and around the world. The proponents usually fall within law enforcement, intelligence, and clinical fields; the critics are often from academia and science fields. According to Grubin and Madsen (2005, p. 366), "proponents maintain that when used properly the polygraph is highly accurate, and emphasise that polygraphy has made valuable contributions to the wider community by resolving 'countless' criminal investigations, uncovering spies, and saving vast sums of money for businesses. Critics, however, vigorously assert that it is no more than an elaborate gimmick, claiming that it is unreliable, invalid and prone to brand innocent persons as guilty".

Synthesize Question

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?

> I think the polygraph should be for lie detection; human observation and intuition do not seem to be reliable in this field. According to the article, the average person rarely detects a lie over 60 percent of the time. That is only a little over chance (50/50). The same holds true for law enforcement officers - those we trust to prove innocence and guilt. In contrast, the accuracy rate of the polygraph, as found by the National Academies of Science (NAS), was between 81 and 91 percent. The authors' conclusion also supports the use of the polygraph in lie detection. "The polygraph does not detect lies, but instead measures physiological responses postulated to be associated with deception. None of these responses are specific to deception, nor are they necessarily always present when deception occurs. However, when used by well-trained examiners and in conjunction with other techniques, it appears to offer a useful adjunct in identifying those who attempt to deceive." (Grubin & Madsen, 2005, p. 367)

Part 2

Read the article "Pitfalls and Opportunities in Nonverbal and Verbal Lie Detection" by Aldert Vrij, Par Anders Granhag, and Stephen Porter 2010.

Analysis Questions

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 (by Grubin and Madsen, 2005) (pp. 89-93).

(1) According to Vrij et al. (2010, p. 91), "Ekman and Friesen's (1969) leakage and deception cues approach; Zuckerman, DePaulo, and Rosenthal's (1981) multifactor model; Ekman's (1985/2001) emotion approach; Buller and Burgoon's (1996) interpersonal deception theory; and DePaulo's self-presentational perspective (1992/2003)... have three elements in common that have influenced verbal and nonverbal lie detection: the notion that, compared with truth tellers, liars (a) may experience stronger emotions (particularly fear, as a result of detection apprehension), (b) may experience higher levels of cognitive load, and (c) are inclined to use more and different strategies to make a convincing impression on others." (2) Paul Ekman started a study on micro-expressions in 1985. Micro-expressions are the leakage of emotion when someone is trying to mask how they feel. Training in micro-expressions is used by security and law enforcement. (3) In order to improve the study of deception and lie detecting, many researchers have started building more real-life scenarios into their laboratory studies. For example, Hartwig, Granhag, Strömwall, and Kronkvist (2006) sent participants to a store to either buy a product or steal a wallet. The truth-tellers bought a product, and the liars stole the wallet. When they came back, they were interviewed about the store visit to determine who was lying and who was telling the truth. These types of studies, where participants are put into real-life scenarios and researchers know all the details are true except for one factor, help researchers determine realistic patterns in lying.

5) Describe three pitfalls of lie detection that you think are most concerning in regard to its validity (pp. 93-96).

(1) Past and current lie detection strategies are commonly built off the idea that certain nonverbal and verbal cues are associated with lying. Most of these known "deception cues" are, in fact, not related to deception. "For example, in DePaulo et al.'s (2003) meta-analysis—the most extensive one to date—the researchers investigated 158 cues, of which 118 (75%) showed no association with deception at all (including cues people often associated with lying, such as gaze aversion, postural shifts, pauses, and self-references)." (Vrij et al., 2010, p. 93)

(2) A second concerning pitfall is the fact that most lie detectors do not get feedback on their performance. Most people either don't find out for sure whether they were lied to or they find out after the interaction has passed. For example, it can take years for judges and law enforcement to realize someone has been wrongly convicted.

(3) A third concern in lie detection is the existence of "good liars". According to Vrij et al. (2010, p. 95) "the best liars are those individuals (a) whose natural behavior disarms suspicion; (b) who do not find it cognitively difficult to lie; (c) who do not experience emotions such as fear, guilt, or delight when they are lying; (d) who are good actors and who display a seemingly honest demeanor; (e) whose attractiveness may lead to an inference of virtue and honesty; and/or (f) who are ''good psychologists." For example, former President Bill Clinton was able to successfully lie about his affair with Monica Lewinsky because he was naturally engaging, physically attractive, intelligent, and was in a trusted position of authority.

6) Of the various common errors made by lie detectors, describe the three that you believe to be most disturbing (pp. 96-102)

> (1) In line with the first pitfall mentioned earlier, a disconcerting lie detection error revolves around incorrect "deception cues". Commonly taught cues such gaze aversion, grooming gestures, and posture changes are assumed to represent lying because they are often associated with shame and anxiety. It is thought that most liars know they are doing something wrong and feel guilt, so they therefore exhibit cues connected to shame and nervousness.

> (2) A second error in lie detection is the Othello Error. This is the incorrect assumption that truth tellers will not be as nervous as liars. People telling the truth can have anxiety about being accused or not being believed. The Othello Error connects these signs of anxiety with deception.

> (3) A third concerning error is a neglect of intrapersonal variations. Law enforcement usually starts suspect interviews with small talk to establish how the person looks and sounds while telling the truth - a control. If the suspect acts differently while discussing the crime, they may be lying. The problem with this approach is low-stakes versus high-stakes questions. Both liars and truth-tellers are likely to change their behavior when asked questions that have more severe consequences.

7) Summarize three of the opportunities for lie detection you find most promising for the future. (pp.102-112).

(1) The Strategic Use of Evidence technique (SUE) is a promising opportunity to combat the Othello Error. SUE differs from current protocols by presenting the evidence after questioning the suspect rather than before. This inhibits the suspect from denying the evidence and/or fabricating an excuse. It also allows the interviewers to question the suspect with less suspicion and an open mind. Suspicion can result in anxiety from truth-tellers (resulting in the perception of lying). In a 2006 study, results showed the SUE trained participants performed around 30 percent better at lie detection (untrained 56% versus trained 85% accuracy rate)

(2) Another promising approach to lie detection is to ask unanticipated questions. When liars encounter unanticipated questions, they have to improvise an answer. This can lead to contradictions in their story. For example, in a study completed by Vrij et al. (2010, p. 106), "The interviewer asked typical opening questions that the interviewees later said they had anticipated (e.g., ''What did you do in the restaurant?''), followed by questions about spatial details (e.g., ''In relation to the front door and where you sat, where were the closest diners?'') and temporal details (e.g., ''Who finished their food first, you or your friend?'') that the interviewees said they had not anticipated. Further, they were asked to draw the layout of the restaurant (unanticipated). On the basis of the overlap in responses to the anticipated opening questions between the individuals, the liars and truth tellers could not be classified at a level above chance. However, on the basis of the responses in the unanticipated questions, up to 80% of pairs of liars and truth tellers could be correctly classified, particularly when assessing drawings (i.e., the drawings were less alike for the pairs of liars than they were for the truth tellers)."

(3) A third promising approach is to consider inter- and intrapersonal differences when judging a person's reactions. This approach is known as the Comparable Truth technique. When a lie detector wants to develop a picture of what a person's verbal and nonverbal truthful behavior is (for later comparison), they need to make sure both the control (truthful) questions and the actual (suspect) questions are asked in the same interview setting, within a short period of time, and that the same topics are discussed.

Synthesize Question

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.

Based on the current statistics and most widely used techniques in lie detection, I still agree with my Question 3 conclusion - the level of human error is still too large to be trusted. The majority of lie detection training still revolves around incorrect notions of deceptive behavior and nonverbal cues. This is made worse by the fact that most lie detectors do not receive adequate feedback about their performance in a timely manner - they don't know if they are wrong in most instances. I believe, however, that human lie detection has a promising future if some of the aforementioned techniques (SUE, Comparable Truth, unanticipated questions) are implemented on a larger basis (security, law enforcement, etc.). The results obtained from these studies indicate human lie detection percentages comparable with those of the polygraph.

Part 3

Comparison Question

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

common.

>   (1) In both articles, historic moments in lie detection were discussed. For example, the

>   Chinese rice powder test was brought up by both sets of authors. The Chinese rice

>   powder test gauged whether a person was lying based on their physiological response to

>   stress. If the suspect's mouth was dry from nerves (liars), then the rice powder would be

>   dry as well. (2) Both groups of researchers also noted that the average person, or those

>   trained in current techniques (verbal/nonverbal cues, emotional responses, etc.), can only

>   detect lies about 50 to 60 percent of the time (similar to chance). (3) Finally, it was

>   concluded by both sets of authors that human lie detectors and polygraph examiners

>   could use more certified training programs and realistic training situations on which to

>   receive valuable feedback.

Contrast Question

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.

>   (1) The first article (part 1) focused heavily on the development and use of the polygraph.

>   The second article (part 2) only mentioned the technology in passing. It seemed to find

>   more promise in the future of human lie detection. (2) The first article focused more on

>   the history of mechanized lie detection and current uses for the polygraph. It did not

>   discuss how the polygraph itself could be improved for future use. In contrast, the second

article made multiple points on how human lie detection could be improved for better

accuracy rates.

Part 4

Do a journal article search (on the UALR Ottenheimer Library search site) to find 1 journal

article related to the topic of lie detection and polygraphs. Choose just 1 journal article that you

think is interesting. This journal article must be a primary source describing original research.

Secondary sources, such as magazine articles, newspaper articles, or internet sites do not count.

The article you choose must have been published within the past 5 years.

11) Read the article. (This question does not require a written response other than to let me know

the authors and title of your article).

> **Title:** *A test of the micro-expressions training tool: Does it improve lie detection?*

> **Authors:** S. Jordan, L. Brimbal, D.B. Wallace, S.M. Kassin, M. Hartwig, and C.N.H.

Street

12) Briefly describe the journal article. Include in your description:

> This study sought to see if lie detection would be improved by training - specifically,

> training in the detection of micro-expressions using Paul Ekman's METT (Micro-

> Expressions Training Tool). Jordan et al. (2019) define micro-expressions as the

> following:

>> "Micro-expressions are fleeting facial expressions of felt emotion, which have

>> been reported to last only 1/25 to 1/2 of a second. The theory behind micro-

>> expressions posits that when people attempt to mask their true emotional state,

expressions consistent with their actual state will appear briefly on their face.

Thus, while people are generally good at hiding their emotions, some facial

muscles are more difficult to control than others and automatic displays of

emotion will produce briefly detectable emotional "leakage" or micro-expressions

(Ekman, 1985). When a person does not wish to display his or her true feelings/he

will quickly suppress these expressions. Yet, there will be an extremely short time

between the automatic display of the emotion and the conscious attempt to

conceal it, resulting in the micro-expression(s) that can betray a true feeling and

according to theory, aid in detecting deception." (p. 223)

Evaluating the use of METT training is important because it is used by airport security in

the United States as part of their SPOT program (Screening Passengers by Observation

Technique).

1) the hypothese(s) being investigated by the researchers

Jordan et al. (2019) hypothesized the following:

"On the basis of the meta-analyses of Bond and DePaulo (2006, 2008), we

predict that none of the experimental groups will perform significantly

better than chance, and again, there will be support for the null hypothesis

(Hypothesis 1). On the basis of previous research on micro-expressions…

we likewise predict that there will be evidence supporting the null

hypothesis (and not the alternative) when comparing the METT training to

bogus and no training conditions on lie detection accuracy (Hypothesis 2).

Finally, we predict that training will affect confidence (Hypothesis 3) and

lie bias (Hypothesis 4), whereby participants in the METT and bogus

training groups will exhibit higher confidence and a higher lie-bias

compared with those who receive no training." (p. 225)

2) the type of research participants (subjects) used

This study used 90 students from an introductory psychology course. 71 percent

of the participants were female and 29 percent were male. The mean value of their

ages was 20.2 years. Each participant was randomly placed in either the METT

training group, the group with no training, or the control training group. The

participants received course credit for completing the study.

3) the research method employed by the researchers

The participants were randomly placed into three different groups. One group

received certified METT training, one group received placebo "bogus" training,

and the last group received no training in lie detection. The "bogus" training was

included to observe the effects of perceived lie detection training (i.e. would the

perception of lie detection training increase the factors of confidence and lie bias

and would these factors affect the results).

The METT training group completed the advanced training module found on

Ekman's website. During this module, participants were trained and tested in

detecting different micro-expressions. The "bogus" training group completed the

Interpersonal Perception Task (IPT). IPT helps individuals make judgments about

others' inner states and relationships by utilizing verbal and nonverbal behavior.

IPT is not described as being for lie detection purposes. Both the METT group

and the IPT group were told they would receive lie detection training.

Each participant in each group watched five videos. The videos were randomly

selected for the participant and so each participant saw a different number of

truths and lies. The videos were taken from five different studies and contained

different levels of lying. Some lies were high-stakes lies told by felons (the type

police would encounter) and others were more in line with lies airport security

would encounter. After watching the videos, the participants were asked if the

person in the video was lying or telling the truth, were asked to rate their decision

confidence (from one to ten), rate the veracity of the statement (from one to ten),

and explain why they thought the person was lying or telling the truth.

4) the most important result of the study

The METT accuracy level (46%) was significantly below chance (50%). There

were no significant differences between the three groups - they performed

similarly. All groups performed poorly when detecting high-stakes and lower-

stakes lies. The poor performance contrasted with the high confidence rates given

by participants. The METT group cited facial cues as the reason for detecting a lie

more often than the IPT group and the no training group.

5) the final conclusion drawn by the researchers

The researchers concluded that there is no evidence to support the idea that micro-

expressions are linked to deception and that METT is an effective lie detection

tool. METT participants performed worse than if they had been guessing. They

also performed no better than those with "bogus" training and no training. Despite

the lack of improvement in skill, the METT group was more inclined to believe

people were lying. This is a troubling finding since METT is an official training

tool for aviation security in the United States.

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?

My journal article focused on a specific study and a specific method of lie detection

(METT). Your articles cited multiple studies and covered more general developments and

concepts in lie detection. Though micro-expressions were mentioned in your second

journal article, it did not discuss Ekman's training program or any findings on the validity

of micro-expression use in lie detection.

14) At the end of your semester project, provide an APA-style reference section that includes all

three of the journal articles read for this project.

[See Reference Page]

References

Grubin, D., & Madsen, L. (2005). Lie detection and the polygraph: A historical review. *Journal of Forensic Psychiatry & Psychology*, *16*(2), 357–369. https://doi.org/10.1080/14789940412331337353

Jordan, S., Brimbal, L., Wallace, D. B., Kassin, S. M., Hartwig, M., & Street, C. N. H. (2019). A test of the micro-expressions training tool: Does it improve lie detection? *Investigative Psychology and Offender Profiling*, 222–235. https://doi.org/10.1002/jip.1532

Vrij, A., Granhag, P. A., & Porter, S. (2010). Pitfalls and opportunities in nonverbal and verbal lie detection. *Psychological Science in the Public Interest*, *11*(3), 89–121. https://doi.org/10.1177/1529100610390861