

In Search of the Tell-Tale Heart

Detecting Concealed Information and Deception: Recent Developments

J. Peter Rosenfeld (Ed.).

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“True! --nervous --very, very dreadfully nervous I had been and am... The disease had sharpened my senses --not destroyed --not dulled them. Above all was the sense of hearing acute. I heard all things in the heaven and in the earth. I heard many things in hell... Oh God! what could I do? I foamed --I raved --I swore! It grew louder --louder --louder! And still the men chatted pleasantly, and smiled. Was it possible they heard not? Almighty God! --no, no! They heard! --they suspected! --they knew! --they were making a mockery of my horror!... But anything was better than this agony! Anything was more tolerable than this derision! I could bear those hypocritical smiles no longer! I felt that I must scream or die! and now --again! --hark! louder! louder! louder! louder! ‘Villains!’ I shrieked, ‘dissemble no more! I admit the deed! --tear up the planks! here, here! --It is the beating of his hideous heart!’ (Poe, 1843/2018).

And so we read from Edgar Allen Poe’s short story, *The Tell-Tale Heart*. In it a murderer of an old man gives it up to police officers deputed to search the premises. And in J. Peter Rosenfeld’s edited volume *Detecting Concealed Information and Deception: Recent Developments*, the various authors give up the latest research on how people unintentionally might give it up. The authors share descriptions and inferences on reliability, validity, and utility for data collection, data analysis and interpretation, investigative support, and legal adjudication.

There are at least five overarching challenges in attempting to know what people know who don’t want you to know what they know. The first is defining what one is searching for—e.g., lies of commission or omission, unconscious and motivated variants of concealment such as dissociation or repression, and cognitive strategies

impeding recall or recognition. In recent years, more research psychologists studying the detection of deception and concealed information have moved from attempts at detecting lies and information concealment to attempts at directly identifying what is being lied about or concealed—often involving some misbehavior (Lykken, 1959; Verschuere et al., 2011). But at issue is whether deception and concealment are the same phenomena for actual crimes as well as mock crimes, in the field as well as in the lab, for individuals with high as well as low motivation to conceal information, for individuals wherein lying and concealment is self-consonant or dissonant, and for high or low stakes varying from death and long-term incarcerations to the inconsequential (cf. Podlesny & Raskin, 1978). Also at issue is how can researchers who seek to support actual field investigations and legal adjudications develop some sort of ground truth against which to compare and contrast detection findings? By definition, there is no ground truth or there would be no need to question a potentially guilty party. False confessions; false memories; the withholding, fabrication, or modification of evidence; corrupt testimony by law enforcement authorities and other interested parties; and the psycho-political dynamics of jury decision making further complicate the quest for ground truth. In such matters it is difficult not to be ensnared in the *reductio ad absurdum* of an aporia as foreshadowed by literature's deconstructionists (Derrida, 1967/1997). Even a mock crime performed at the researcher's direction in the lab may mean something very different to both the lab subject and the researcher—each at different points of time. An analogy might be an alleged sexual attack and its differential labeling by the participants during the occurrence and its aftermath.

The second challenge is choosing detection techniques—the means of searching for what we're searching for. Historically, these have included posing questions or presenting or imposing tasks through continua anchored by degrees of pleasure and pain and of confrontation and rapport building. These means are used to identify the information we are ultimately searching for, but most often approximations to this information. for (cf. Cronbach & Meehl, 1955). These approximations have commonly included central and peripheral nervous system reactivity like EEG variations and skin conductance response, external physical behaviors like micro-facial expressions and dynamics of bodily movements, verbal content like degree of detail and contextualization of the verbal response, and paralinguistic cues like speech rate and pitch (Granhag, Vrij, & Verschuere, 2015). Most researchers do not rely on just the attempt to directly elicit the information searched for or an approximation to it—except, perhaps, for some torturers working for governments, cartels, or criminal organizations who often enough still face the ground truth problem. Instead, a contemporary goal among leading researchers is to empirically validate combinations of detection techniques and approximations of what they ultimately are searching for-- each offering an independent increment of validity towards accurately identifying an individual's pertinent knowledge (Gronau, Shakhar, & Cohen, 2005). Unfortunately, some of the detection techniques and approximations to information searched for that are most commonly used and successfully inserted into public consciousness—such as the written statement of Scientific Content Analysis, the eye movements of Neuro-Linguistic Programming, and the micro-facial muscular changes of the Facial Action Coding System—seem to have been seldom empirically supported beyond a single or small number of labs, research

groups, and purveyors (Vanderhallen, Jaspaert, & Vervaeke, 2016; Weinberger, 2010; Wiseman et al., 2012). And it now seems commonly accepted among researchers who publish in refereed journals that rapport-building, open-ended questions, selectively imparting information already known by the interrogator, and other non-coercive approaches encouraging the individual to engage in discussion seem to “work” better (Alison et al., 2014; Alison et al., 2013; Granhag et al., 2015; Russano et al., 2014). This is especially the case if one correctly assumes the counter-interrogation strategies harbored by the individual.

A third challenge is developing a theoretical foundation for why the combination of detection techniques and approximations to the information searched for might work. The two most common foundations are that (1) lying and concealing are more difficult to engage in than truth telling and that (2) knowing elicits some sort of orienting reflex or response—the polygraph most often founded on the former, the electroencephalogram (EEG) and functional magnetic resonance imagery (fMRI) on the latter. As to the former foundation, the difficulty is presumed to involve the liar or concealer’s impression management through attempted behavioral control; cognitive load in constructing and maintaining what is not true in various social contexts; and emotional arousal through cognitive load, attempted behavior control, and the added burden of engaging in behaviors—e. g., lying—commonly proscribed (Vrij, 2008). As to the latter foundation, its attractiveness lies in its presumed difficulty for manipulation by an individual. It would be as if some telltale heart too easily betrays the individual when confronted with the truth, regardless of attempts to lie and conceal (Gati & Ben-Shakhar, 1990).

And this brings us to the fourth challenge, that of countermeasures—an individual's attempts to beat detection techniques through physical and mental strategies and tactics . In the context of the individual's efforts at lying and concealing being more difficult than truth telling, commonly researched countermeasures include tongue biting, foot pressing, and differential tensing and relaxing of bodily musculature. Such activities are presumed to potentially contaminate linkages among deception, concealment, truthful and relevant information, and such approximations to them such as skin conductance, heart rate, blood pressure, and respiration to lying and concealing (Honts, Hodes, & Raskin, 1985). In the context of the orienting reflex or response, another set of countermeasures involves the differential imagination of distressing and relaxing imagery, intra-psychic self-statements, and selective attention and inattention to stimuli. Such countermeasures are presumed to inhibit or distort the orienting and linkage to the presence or absence of information being sought (Rosenfeld et al., 2004). In fact, the two sets of countermeasures may be consequential for both detecting deception and information (Honts et al., 1996). And there is a third set of countermeasures—reading up or being briefed on the likely detection techniques and training to beat or at least confound them.

The fifth challenge is developing scientific findings that pass legal criteria for admissibility in criminal and civil adjudication. In the context of important legal decisions like *Frye v. United States* (1923) and *Daubert v. Merrell Dow Pharmaceuticals, Inc.* (1993), researchers attempt to demonstrate that conclusions about deception and the truth are based on various detection techniques which, in turn, are based on testable hypotheses; that these hypotheses have been tested with results

published in peer-reviewed publications; that the techniques have known error rates; and that the techniques and their use are commonly accepted by the appropriate scientific community. We're not there yet. The biggest problems include carrying out more field studies; developing lab studies with appropriate ecological validity to the field; surveying appropriate scientific communities for what detection techniques and interpretive data strategies are accepted; carrying out studies with multiple dependent variables each with unique contributions towards validity; and educating decision makers as to the differences among accurately detecting memory, imagined information, memory for imagined information, lies, and the truth (Meixner, pp. 420-422)

I maintain that Rosenfeld's *Detecting Concealed Information and Deception* is now the most current and comprehensive work that addresses the challenges I have described above. I will be assigning it in my upper-level undergraduate course on the detection of deception and concealed information. And I highly recommend it for psychology majors and graduate students with an interest in the area, the area's active researchers, forensic psychologists, investigative interviewers and interrogators, and those judges and attorneys seeking an informed take on the latest scientific developments. In the remainder of this review, I will share only some highlights of Rosenfeld's text and conclude with a philosophical implication from Poe's *The Tell-Tale Heart* on detecting deception and concealed information.

To begin, what is often considered a weakness of edited volumes, here I consider a strength—namely, the repetition of the same information throughout multiple chapters. Examples include (1) an explanation of the use of effect sizes and signal detection

theory's area under the curve, (2) problems with Comparison Questions Tests and Relevant Information Tests leading to Lykken's popularization of the Concealed Information (Lykken, 1959), (3) the problem of the public leaking of information contaminating interpretations of the Concealed Information Test, and (4) common countermeasures. I posit that the re-reading by students and the uninformed of this information in different chapters might contribute to effective learning through distributed practice.

More substantively, Ambach and Gamer's chapter "Physiological Measures in the Detection of Deception and Concealed Information" clearly describes the history and current status of cardiovascular, respiratory, blood pressure, skin conductance/resistance, pupil diameter, facial temperature, and the combination of autonomic nervous system (ANS) measures. The authors usefully point out that threats to the Concealed Information Test include not only countermeasures, but innocents deducing information that, presumably, only guilty parties should know; as well as basic memory, motivation, and attention phenomena that might lead guilty parties to be categorized as innocents (p. 26).

Rosenfeld et al.'s chapter "Effects of Motivational Manipulations on the P300-Based Complex Trial Protocol for Concealed Information Detection" might be the most difficult for undergraduates and readers outside the psychology profession. It reads like a research article in a scientific journal with expectations for understanding fairly complex experimental groups and procedures, Bayesian analysis, three-way mixed analysis of variance, and a Summary and Conclusions section that would require close reading

(pp.138-141). In contrast, most chapters in the book are reviews of research findings and their implications. On the other hand, Rosenfeld and co-authors very nicely show how different approximations to what ultimately is being searched for—here contrasting ANS and P300 EEG data—can suggest similar and different conclusions as to the presence of memory malingering and the roles of experimental instructions to and potential reinforcers for research participants. I would like to see this information integrated into clinical and psychometric applications for detecting malingering (Rogers, 2012; Soliman & Resnick, 2010).

I found Sartori et al.'s chapter “Deception Detection with Behavioral Methods: The Autobiographical Implicit Association Test, Concealed Information Test-Reaction Time, Mouse Dynamics, and Keystroke Dynamics” the most exciting in the book. One reason is that implicit association tests have already been quite valuable in identifying racial and other biases subject to intentional concealment in many social situations (Ottaway, Hayden, & Oakes, 2001). Another is a review of quite recent research on associating computer keystrokes and mouse dynamics to deception-relevant information. Described here are initial reaction times and those between movements, overall time for responding, trajectory of movement, kinematics like velocity and acceleration, distances between actual and optimum trajectories, duration of key presses, and number and types of errors (pp. 221-226). Here, I think back to World War II wherein some intelligence operatives could be identified by their characteristic tapping out of codes via telegraph—now a contemporary phenomenon among social groups (Greenman, 1999).

I continue to be disappointed with how little various individual differences seem to be useful in deception-related phenomena as described in Elaad's chapter "Personality, Demographic, and Psychophysiological Correlates of People's Self-Assessed Lying Abilities". Although most people tend to overestimate their lie detection ability and underestimate their effectiveness in lie-telling, there are weak if any gender differences in self-assessed lie detecting ability (p. 361). Both religious and secular individuals seem to overestimate their lie detection ability (p. 360). The lie-telling and lie-detection ability self-ratings of adolescents are not different from those of other age groups (p. 363). Deception-related on-the-job experience may contribute to higher self-perceptions of lie-telling and lie-detection abilities (p. 363). And individual differences significantly contributing to lie-telling or lie-detection effectiveness are still awaiting significant support, as concluded by Vrij (2008) in his analysis of lie detection without using specialized tools. The past, present, and future of detection seem to remain with dynamics within the person not between people. And if so, this might help explain while Paul Ekman's well-known work on micro-facial expressions and deception (Paul Ekman Group, 2018) is not covered in Rosenfeld's book and continues to be strongly critiqued by members of the deception detection research community (cf. DePaulo, 2014).

Kleinberg et al.'s chapter "Detecting Concealed Information on a Large Scale: Possibilities and Problems" addresses the possibilities of applications to intelligence, security, and law enforcement that are quick, flexible, and concurrently assessing large numbers of people. There are big validity problems noted for behavioral observations and speech analysis. And Table 16.1 (p. 391) clearly and unfortunately shows that

thermal imaging of pre-orbital facial areas, reaction times to differential stimuli, and verbal content-based methods all have problems in meeting criteria such as the quickness and flexibility of data collection. This is bad news for counterterrorism and various counter-crime authorities at major airports and other large public venues.

Meixner's chapter "Admissibility and Constitutional Issues of the Concealed Information Test in American Courts: An Update" not only covers the *Frye/Daubert* criteria well-known to forensic psychologists but also implications for the protection of the Fourth and Fifth Amendments. The latter will be of increasing concern to the legal profession and informed citizenry as reliability, validity, and utility of detection methods continue to increase. This is just one of several examples wherein constitutional scholars must develop a technology-informed hermeneutics not remotely contemplated when original legal texts were written and approved. Meixner also presents what I consider the fairest presentation of Farwell's much-maligned work on Bran Fingerprinting (Farwell, 2005; Rosenfeld, 2005) in the context of admissibility.

Now, let's return to Poe. The murderer thinks he hears the beating heart of the corpse of his victim—a heart telling the tale of a murder and its perpetrator—but the murderer's tell-tale heart is the giveaway. This heart is constituted by hallucination and delusion. The hallucination is hearing the corpse's heartbeat. The delusion is believing the investigators hear it as well but are feigning the contrary while mocking him derisively. Presumably, these occur through the cognitive, behavioral, and emotional load of realizing what he has done and from keeping up the lie. Is this a self-inflicted test of comparisons of functioning before and after the murder was conceived and implemented?

A self-inflicted concealed information test so close to the planks and the corpse? The investigators' interrogation strategy of letting a suspect's own mind and body do the talking, maybe with a strategic use of probable evidence that the corpse is close by?

I think of the Austrian philosopher Ludwig Wittgenstein's private language argument from Philosophical Investigations (1951). He posits that such a language could only be known to a communicator concerning his private sensations and perceptions. And that another individual could not access and understand this language. Wittgenstein goes on to argue that there cannot be such a language. A belief in it is a combination of nonsensical and false. Wittgenstein's conclusion is good news for detectors of deception and concealed information. There's may only be a public and detectable language constituted by various approximations to what we search for and how they are identified and interpreted.

In conclusion, Rosenfeld and his fellow experts—an international cast from Japan, Israel, the U.S., and European countries—are on the track of tell-tale hearts. And for another book, I wonder what adversarial experts from Russia, China, Iran, and North Korea are up to? Would they deceive, just tell us, and how would we know the difference?

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