The Psychophysiology of Detecting Lies: More Problems

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Recommended Citation
Available at: https://commons.erau.edu/ibpp/vol3/iss15/3
Abstract. This article describes a recent study that illustrates the complexity of empirically validating the psychophysiological detection of deception.

Most scientific psychologists believe that the validity of the psychophysiological approach to detecting deception--the so-called polygraph or lie detector--has not been adequately demonstrated. To these psychologists, validity denotes that an assessment device indeed measures what it’s supposed to measure--here, the phenomenon of deception.

In contrast, many practitioners of polygraphy believe that validity is very high with very low false positive and false negative rates. Often they attribute documented failings of polygraphy to problems with or mistakes of the polygraphy examiner--the human element, not the lie detection apparatus.

A number of factors contribute to such a divergence of views. Only four will be mentioned here. (1) The phenomenon of deception or lying is complex. One may lie to others. One may lie to oneself, thereby creating the result of lying to others, if not the actual process. The same may apply not to lying at all but to various phenomena of dissociation. One has different levels of awareness at different moments about different aspects of what one is being asked. Other concurrent and epiphenomenal psychological phenomena may at least partially share similar physiological substrates or features or mask those of deception with yet other substrates and features. (2) The social reinforcement contingencies are radically different for scientific psychologists and polygraphy practitioners. The former can relatively easily “get funding” (albeit from different sources) and “get published” (albeit in different journals) regardless of findings as long as the research has adhered to generally accepted strategies of scientific method. The latter necessarily endanger their livelihood and professional identity by finding polygraphy to be invalid--unless they also develop some “better way.” This social fact does not suggest that the latter would purposely distort results any more than representatives of other professional groups in the same circumstances. However, the history of science and professional practice does suggest that social reinforcement contingencies similar to those of polygraphers are correlated with “misperceptions” of results at a level above chance. (3) Social psychological phenomena as diverse as demand expectations, self-fulfilling prophecies, nonspecific factors, interview and interrogation strategies and tactics, and the “bogus pipeline” belief--the person being polygraphed believing that the polygraph is infallible--often suggest that what is being assessed may not be deception at all. (4) Even when using each polygraphed person as their own experimental control, various personality types and prior experiences can befuddle the quest for truth of the polygrapher depending on the nature of the truth being sought.

A recent study on patterns of regional brain activity correlated with variants of anxiety underlines the plight of the psychophysiological detector of a psychological state: data can be collected supporting the hypothesis that two kinds of anxiety--anxious apprehension (e.g., worry) and anxious arousal (e.g., panic)--“look different” psychophysiological, especially neurophysiologically. Depending on the social situation, panic seems to be correlated with a larger asymmetry of activity in the left cerebral hemisphere and a selective increase in right parietal lobe activity. Panic also seems to be correlated with
different somatic symptoms--more significant changes in heart rate, skin temperature, and frontalis electromyographic activity.