

caused in part by the method of measurement and in part by significant individual differences in the resting level of the autonomic functions. He cautions against overgeneralizing the significance and pervasiveness of autonomic response specificity and stereotypy. Few reaction patterns were identical for a subject under the four emotional conditions and this is further evidence against general interpretation of physiological responses. Using 7 responses (transmuted into 14 scores). Ax (1953, 1960b) obtained distinct but different physiological patterns for anger and fear. However, his study does not show much evidence for physiological stereotypy.

In a study concerned primarily with various techniques of quantifying autonomic responses, Dykman (1959) used the three conventional polygraph indicators on 40 medical students under conditions of rest, noise and responding to a series of emotional and non-emotional questions; lie detection, as such, was not attempted. He found:

(a) Skin resistance was the easiest to evaluate and the most consistent of the three measures.

(b) The autonomic responses diminish rapidly to a relatively constant level for each series of stimuli.

(c) Subjects are more reactive in skin resistance than in heart rate or respiratory rate, both in terms of the magnitude and frequency of response.

(d) The magnitude of autonomic response is dependent on the initial level of functioning; in general, the higher the initial level, the smaller the response.

(e) An individual's reaction in one autonomic subsystem cannot be predicted from his reaction in another.

These few studies, from among a large literature, show that a simple or purely mechanical treatment of the three polygraph indicators would lead to a low accuracy of lie detection. Polygraph operators deal with this situation in an intuitive manner, shifting from one indicator to another, in an unknown fashion, in order to analyze a record. Various "schools" of interpretation have developed in which the examiner emphasizes one of the three indicators to the relative exclusion of the others; each indicator is regarded by some examiner as the single, "best" indicator.<sup>6</sup>

Since, as a result of learning processes, individuals undoubtedly differ in the choice of response mechanism and degree of responsivity to emotional stimuli, there is an ample basis for various examiners to build up confidence in their own methods of analysis. But since intuitive, rather than objective, rules play a large role in the evaluation of records, the idiosyncracies of various operators undoubtedly contaminate the accuracy of the results. This may not be a problem for cases which are straightforward and routine but it must limit accuracy for the cases which are ambiguous or difficult to interpret.

A striking example is the "Total Chart Minutes" concept developed and copyrighted (1960) by Cleve Backster, director of the National Training Center of Lie Detection, New York, N.Y. The term "total chart minutes" refers to the accumulation of time during which a subject has been asked questions during one or more trials on the polygraph; i.e., the time between trials is excluded. The useful purpose served by this concept is that it attempts to account for the value found by some examiners for a preferred indicator as due to the phase of interrogation during which that indicator may be especially discriminating. A series of curves is provided which describes the relative effectiveness (from "excellent" to "poor") of the three standard tracings (breathing, heart, GSR) for a "probably innocent" or a "probably guilty" person for any period with the total chart minutes structure. No data are provided to verify the schematic curves; in fact, when asked for confirmation of this intriguing concept, Backster could (or would) not provide any corroborating data to support his thesis.

It becomes clear that in real life we cannot rely solely on the individual interpretation of an examiner without verification by independent means, such as another, completely independent evaluation by another examiner, or a background investigation, or both. The addition of independent data must increase the degree of confidence we can place in the final result. Thus, there is an urgent need for (a) multivariate recording in actual interrogations, (b) independent

<sup>6</sup> One polygraph examiner comments: "Granted that intuition may play a part in the analysis, but the analysis is more probably a Gestalt process, into which a great deal of experience on the part of the examiner is compounded." This reviewer noted that some examiners disregard the GSR.