Podlesny, J. A., & Raskin, D. C. (1977). Physiological measure and the detection of deception. Psychological Bulletin, 84 (4), 782-799.

Podlesny and Raskin (1977) reviewed laboratory studies on the detection of deception that utilized physiological measures as ways to identify those who might try to be deceptive. Their review is summarized in five categories, and addresses the applicability of laboratory studies to real-life situations and the accuracy and reliability of various physiological measures in detecting deception. The five categories are: the deceptive context, general considerations, tests of deception, data analyses and physiological measures, and each category is summarized briefly here.

The deceptive context is described as "the total set of circumstances surrounding a subject's possible deception" (p. 783). In laboratory studies, the deceptive context has to be artificially created, and there are concerns as to how applicable the deceptive context in laboratory studies is to the deceptive context in real-life situations. Investigators have identified high stress levels, motivation to deceive and threat of punishment to be important components in creating the deceptive context. However, further research is needed to learn more about characteristics of the deceptive context so that laboratory settings would parallel real-life situations.

To detect deception is a very difficult task, and there are general considerations regarding the detection of deception. First, because no particular patterns of physiological measures (such as increase or decrease in the heart rate) clearly indicates deception, investigators must be able to distinguish patterns indicating deception and similar patterns indicating non-deceptive cases. Similarly, besides deception, various extraneous variables (such as surprise and uncertainty) influence physiological measures, and make it difficult to distinguish physiological changes due to deception from physiological changes due to things other than deception. Therefore, controlling extraneous variables becomes crucial in the detection of deception.

In laboratory studies, various tests of deception have been created to examine deceptive responses and truthful responses. Such tests often include "critical items" and "control items," and ask participants to respond to items while they are attempting deception or while they are being truthful. Critical items are associated with deception, and control items are not associated with deception. So, the comparison of responses between critical items and control items could provide information about processes that occur in deceptive responses, but not in non-deceptive responses. Also, the comparison between deceptive participants and non-deceptive participants could be used to examine changes that only deceptive participants may exhibit.

In analyzing physiological measures in the detection of deception, objective techniques would enhance the accuracy and reliability of physiological measures in both laboratory and real-life settings. The accuracy rate of detecting deception has been used; however, statistical analyses have not been applied to accuracy rate data or data from physiological measures. Although the practical importance of actually detecting deception should be emphasized, more objective evaluations and statistical analyses of data would benefit research in the detection of deception.

Investigators have tried to measure physiological changes associated with deception in various ways: cardiovascular activities (e.g., blood pressure and heart rate), respiratory activities (e.g., inspiration expiration ratio), muscle activities, ocular activities (e.g., eye blink), changes in voice, etc. Some measures have shown patterns of changes associated with deception, and others have not yet shown conclusive patterns. For example, increased blood pressure was found to be associated with deception, while the inspiration expiration ratio did not show above-chance level accuracy under some

circumstances. As to the use of changes in voice for the detection of deception, the electronic voice analysis has indicated that the greater voice intensity was associated with deception in a low band (100-250 Hz) of voice signals. There were no particular patterns found in a full band (100-6000 Hz) of voice signals that were associated with deception. Also, some investigators have argued that stress induces changes in the voice, and some studies provide evidence that changes occur in the voice due to stress and deception-related stress. However, more research is needed to provide conclusive evidence that stress would lead to particular changes in voice. At the end, Podlesny and Raskin (1977) argue that more research is needed to identify and establish reliable measures for the detection of deception.