

# PROJECTIVE ASSESSMENT ENHANCED WITH PSYCHOPHYSIOLOGY

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## Abstract

The addition of a psychophysiological modality is recommended to provide an objective and quantitative correlate of projective processes. Measures of skin conductance have an early history of being used as an index of cortical activity with psychological significance (Jung, 1907; Neumann and Blanton, 1970; Peterson, 1907; Prince and Peterson, 1907). Recent advances in technology have permitted continued development of the work initiated by those early investigators. A user-friendly software application was developed to provide psychophysiological monitoring of skin conductance levels during administration of the Rorschach Ink Blot Test and Roemer Symbol Test. Skin conductance levels were continuously monitored during the counterbalanced administration of the Rorschach Ink Blot and Roemer Symbol Test to adjudicated male and female residents of a therapeutic residential alternative to incarceration. The application of simultaneous physiological monitoring was demonstrated to be useful during administration and interpretation of projective instruments. Examples will be presented which provide event markers of meaningful and significant mental events providing potential to enhance assessment and intervention.

## Introduction

A word association task was coupled with simultaneous monitoring of Galvanic Skin Response (GSR) by Jung (1907) to add to the diagnostic capability of his word association test. Subjects were presented words specifically selected to explore and locate a "complex with strong feelings" (p. 253). Jung looked for elevations in GSR amplitude as an attempt to bring his interpretations closer to science than to art.

Neumann and Blanton (1970) describe the conceptual development of early electrodermal research. They describe how Féré, a student of Charcot's, during 1888, explored the relationship between the electrodermal activity and "sensory or emotional stimulation." Féré stated his results were "valuable as external indicators of the excitation of the nervous system" (p. 461). Observations of the relationship between electrodermal activity and psychological stimulation were also reported by Tarchanoff during 1889. During 1904, an engineer E. K. Mueller, invited Veraguth to provide an opinion about his observations that psychological processes seemed to be correlated to changes in body resistance when conducting a galvanic current. Veraguth immediately became interested in the phenomenon and applied the experiments on his wife that evening using

"sensory stimuli and arousing unpleasant emotions" (p. 468). Veraguth believed that the discovery of electrodermal phenomena would be important for the "objective study of psychological, psychiatric and neurological problems" (p.469).

Peterson (1907) described the application of electrodermal monitoring for increasing understanding of emotion. The method consisted of presenting stimuli while simultaneously monitoring electrodermal activity. The stimuli were varied and included "sensory, verbal, strong, indifferent, intellectual, and emotional" words. He mentioned previous attempts by others to observe electrodermal activity only to have their efforts lost in "oblivion" due to "incredulity or lack of interest, probably both." (p. 804) He found electrodermal measures to be more accurate than the pneumograph and plethysmograph. Criticism by peers included assumptions that the results obtained were artifacts from muscular activity and that simultaneous plethysmography would provide the appropriate control. Peterson's results indicated no relation between plethysmography and electrodermal activity. He believed electrodermal responses to be "directly proportional to the degree of emotion aroused," (p. 805), which uncovered an emotional complex.

A female diagnosed with multiple personality disorder was examined by Prince and Peterson (1907). The subject was hypnotized as the dreams of her three personalities were explored. Specific words taken from the lives of her other personalities were presented. GSR amplitude increased during the hypnosis and word reaction conditions in response to specific words. These increases occurred during presentation of events that belonged to another personality that the conscious personality did not remember. The technique of pairing GSR measures with exploration of subconscious processes was beneficial in uncovering processes of which the subject was unaware.

## Method

Participants were advised of the voluntary nature of their potential participation. The confidentiality of their responses during participation was described. Potential participants were informed that there would be no compensation, special privileges or rewards as a result of participation. Volunteers were then solicited. Each participant's privacy was protected. Each participant was invited to sign two consent forms prior to participation in the study. One consent form was a verification of informed consent to participate. The other form was consent to view the participant's demographic data from the confidential record at The Dade (Hialeah, FL) or Turning Point Bridge (Pompano Beach, FL). The administrations of the Dade and Turning Point Bridge granted requests to utilize the facilities for research. These facilities are restrictive residential treatment programs. They are offered as an alternative to incarceration for adults who experience drug abuse and have committed criminal offences. Strict compliance with the ethical guidelines for participants of psychological research was maintained according to American Psychological Association guidelines (APA, 1992).

Participant 1 was a 34-year-old female resident of the Turning Point Bridge. She had obtained a GED, was married, had one child and was working as an electronics technician. Her history included 22 months in prison for manslaughter (while driving under the influence of alcohol), a history of drug abuse and an arrest for possession of marijuana. Prior to the administration of the projective protocol and during a structured verbal interview, she received a score of 6 on the Hare PCL-R (Hare, 1991).

Participant 2 was a 27-year-old resident of the Dade Bridge. He was 27 years old with a history of drug abuse and arrests for violent and non-violent crimes. He completed a high school, played football in college and was expelled due to possession of drugs. He worked as a bouncer in nightclubs. His wife had died from natural causes and his mother cared for his daughter. He was the unofficial leader of his peers and was the first to volunteer. His appearance was one of sternness and strength. On one occasion, he was observed crying and apologizing for some offense in a hallway as his mother berated him. Prior to the administration of the projective protocol and during a structured verbal interview, he received a score of 30 on the Hare PCL-R (Hare, 1991).

Participant 3 was a 32-year-old resident of the Dade Bridge. He had been honorably discharged after 6 years of military service. He then attended two years of college and left to receive licenses in securities and insurance. His history included 3 arrests for possession of cocaine and one for domestic battery on a female friend. He had previously participated in several drug rehabilitation programs without completion. Prior to the administration of the projective protocol and during a structured verbal interview, he received a score of 22 on the Hare PCL-R (Hare, 1991).

### Procedure

Each participant was administered a verbal interview including use of the PCL-R (Hare, 1991), the Rorschach Ink Blot Test (Rorschach, 1948), the Roemer Symbol Test (Roemer, 1966) (Roemer, 1967), and, finally, a debriefing. The administration of the Rorschach and Roemer Symbol Tests were counterbalanced.

Skin conductance sensors were attached to the first and third fingers of the left hand. The J&J I-330 system was interfaced with a notebook computer containing a 486 processor with a speed of 33hz. The I-330 system contained a built in optical interface to prevent an electrical hazard. Skin Conductance Level (SCL) was measured during the entire process. The method of operating the monitoring instruments while measuring SCL during the presentation of a projective instrument is detailed in a manual (Fels, 1999). Sampling rate of skin conductance was 2 samples per second with an average of every 2.5 seconds. Recording of skin conductance began 10 seconds prior to presentation of a projective stimulus. The recording continued 10 seconds after the participant had handed the stimulus

back to the Examiner. Each participant's protocol was audio recorded to provide an accurate recording of responses.

## Results

### Participant 1 Selected Rorschach Responses

As can be seen in Figure 1, the graph of increased physiological response of SCL during response 10 is pronounced. This is significant in terms of looking at the response from the point of view of content analysis. The meaningfulness of response 10 is enhanced as we have an objective indication of the importance of the response. It appears that the mother is of paramount importance to the participant.

If we find a response with a tremendous importance attached to it for the subject, it is advisable to have the participant associate to the specific stimulus word. In light of the above, the examiner may diagnose at the time feeling challenged to find out what is behind the defensive response "creature." Participants with highly defensive makeups will hide a conflict behind ambiguous responses.

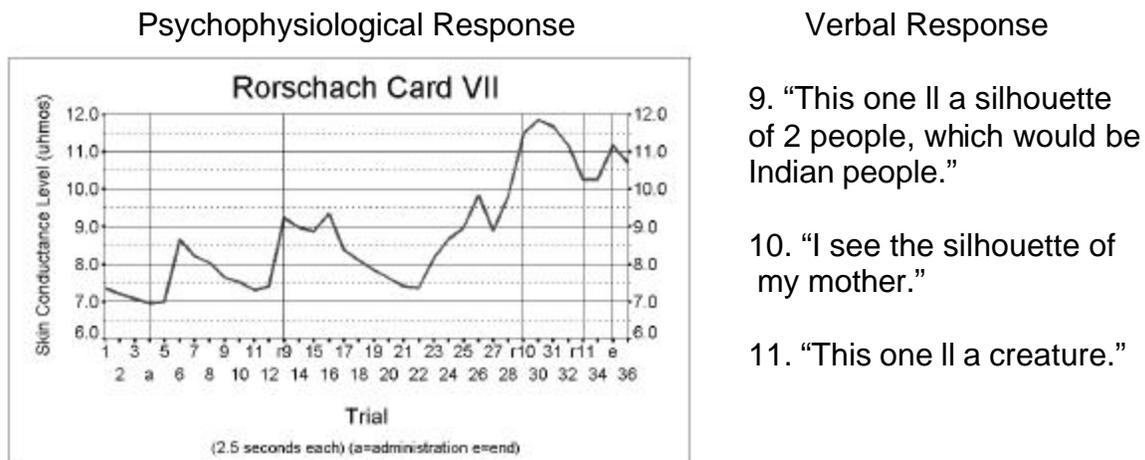
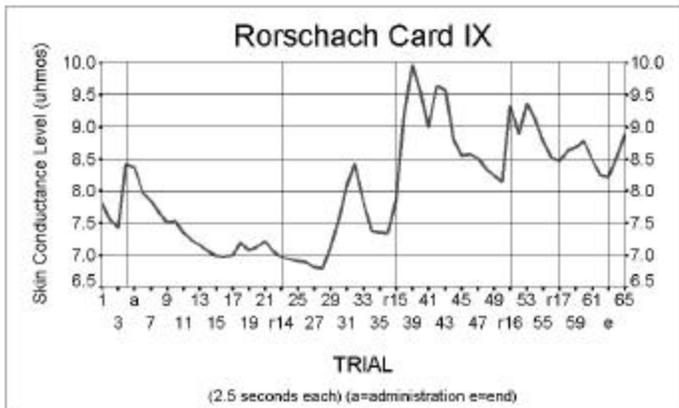


Figure 1. Comparison of psychophysiological and verbal responses during administration of Rorschach Card VII.

Figure 2 illustrates a decrease in SCL prior to the participant acknowledging a response to the stimulus. An increase in SCL occurs just prior to her first response. The next response elicits the highest SCL for this stimulus. Although the SCL for the last response was decreasing, the level continued to be higher than during the pre acknowledgement trials. The fact that a response is accompanied by a high SCL indicates that this theme is of outstanding importance in the life of the participant.

### Psychophysiological Response



### Verbal Response

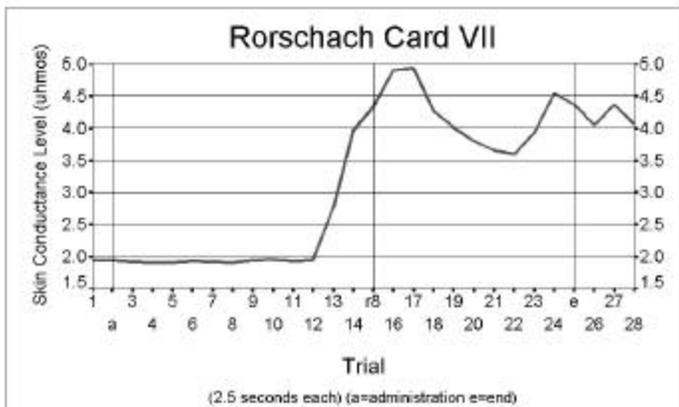
- 14 "This one I really don't see anything."
- 15. "This bottom section is like a child when you have a sonogram."
- 16. "This one ll a pelvic you know, like an x-ray almost."
- 17. "This one ll an alligator and snout."

Figure 2. Comparison of psychophysiological and verbal responses during administration of Rorschach Card IX.

### Participant 2 Selected Rorschach Responses

SCL was unresponsive during cards 1-6, as one would expect from a psychopathic individual. Suddenly the SCL increased dramatically and was sustained during response 8. The SCL amplitude and range were greatest for this card above all previous cards. The participant provided 16 responses during this administration. This card combined with the inquiry provides interesting indices about his relationships. The reason for this may be the tremendous emotional upheaval of the participant when he saw the most upsetting event of his previous life.

### Psychophysiological Response



### Verbal Response

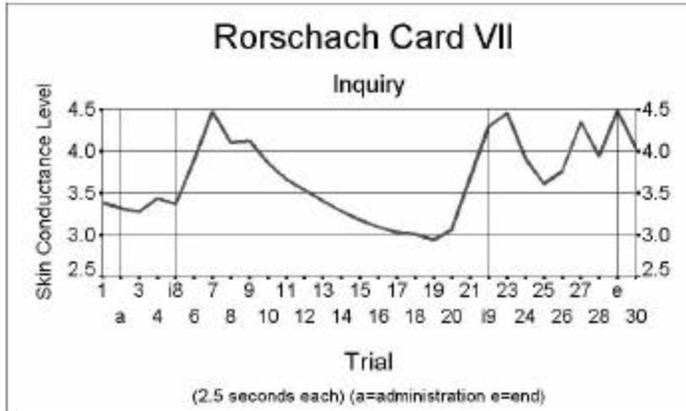
- 8. "Gave me a flashback of somebody. Like what happened, when they picked my partner off the concrete, the blood that was laying. That's what that ll. The blood that was laying on the cement." (This occurred during a bank robbery while attempting to escape the police. His friend was shot in the back of the head. He stopped, kneeled down to attend to his dying friend. While holding up his friend's head, he was arrested by the police.)

Figure 3. Comparison of psychophysiological and verbal responses during administration of Rorschach Card VII.

At this point, this unshakeable psychopath appears shaken because of this one issue, which is paramount for the understanding of this individual.

Psychophysiological Response

Verbal Response



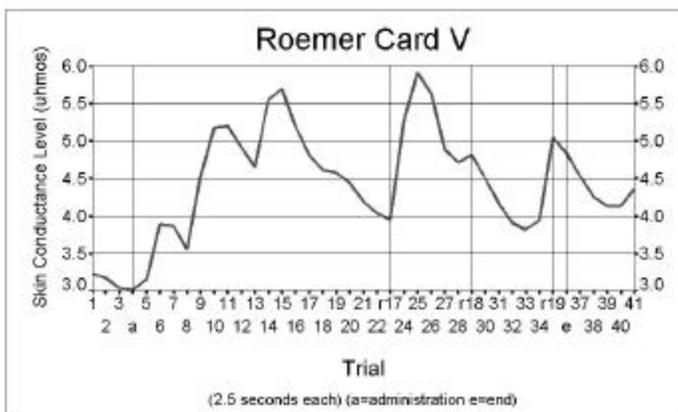
- 8. "When they picked up his head up off the ground, that's like the smear that was left laying on the concrete."
- 9. "The blood was just laying there from the back of his head. It flashes back to the day that it happened."

Figure 4. Comparison of psychophysiological and verbal responses during inquiry of Rorschach Test Card VII.

The responses 17, 18, 19 appear to be indicative of a massive manifestation of denial. However, because of the extreme increase of SCL, it is indicated that the responses are covering up phenomena that are of the greatest central importance to him. Here again, a non-leading inquiry could uncover potentially significant material.

Psychophysiological Response

Verbal Response



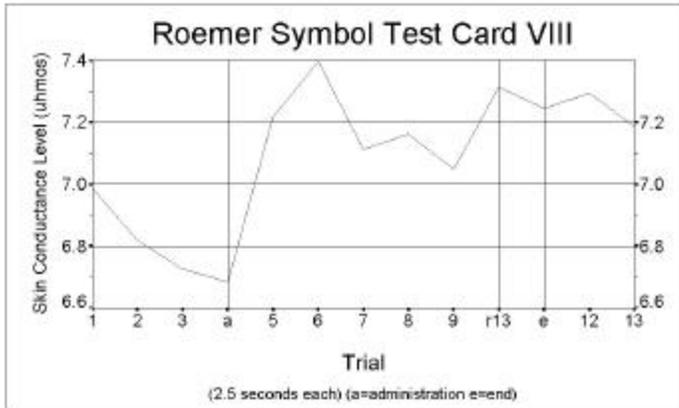
- 17. "I am looking at it in different directions."
- 18. "This ll a big blur."
- 19. "A big blur."

Figure 5. Comparison of psychophysiological and verbal responses during administration of Roemer Symbol Test Card V.

## Participant 3 Selected Roemer Responses

Since the SCL is unusually sustained, this indicates the centrality of strong passive and self-destructive needs.

### Psychophysiological Response



### Verbal Response

13. "LL 2 animals chewing on each other."

Figure 6. Comparison of psychophysiological and verbal responses during administration of Roemer Symbol Test Card VIII.

## Discussion

The focus of the present research is directed toward the application of a method of monitoring psychophysiology during projective assessment. This is based on previous attempts to quantify unconscious events. There has been general agreement that Skin Conductance Level is not only an appropriate indicator of unconscious phenomena but also superior to other physiological measurements.

The production of a discriminatory skin conductance response as a marker of an unconscious event is provided as an additional method for generating hypotheses to assist in analysis of content. Geertz (1999) provided an example of content analysis. Skin conductance level amplitude variability signaled affective significance for individual responses and traditional projective stimulus themes. The significance can either be an increase or decrease in affective intensity. This information about affect intensity and information processing will enhance a content analysis. The graphic representation of the occurrence of significant internal events adds to the clinical issues contemplated.

This individual assessment method allows the clinician to compare, save and review skin conductance level data to specific stimulus responses before, during and after administration. Skin conductance levels indicate eccrine sweat gland activity. The eccrine sweat glands provide an index of cortical activity with psychological significance.

This is significant to the examiner as it includes the experience of frequency, duration, and intensity of inner experience that mirrors conscious and unconscious experience. The datum provides an event marker of meaningful and significant mental events. This systematic method of utilizing psychophysiological data can inform the projective assessment allowing it to become more than an assessment of articulation. It is anticipated that researchers and clinicians will have a useful and objective tool to pursue answers to numerous questions.

This research supports the compelling need to objectify what was once only considered theoretical or speculative. This has been an attempt to further understand the unconscious and to move from basic to applied science.

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