Electrodermal responses in the sociopath¹

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Sociopathic Ss were compared to a non-sociopathic control group with respect to base level and magnitude and frequency of elicited and emitted GSRs. The sociopathic Ss' GSR patterns did not differ significantly from controls on the measures of base level and elicited GSR. The sociopaths' rate of spontaneous GSR emission was not significantly altered by the introduction of shock anticipation and was significantly lower than controls under the same shock threat stress condition.

The behavior of the sociopath, especially with respect to emotionality, is paradoxical. Among other symptoms (Cleckley, 1959), the sociopath appears to be free of neurotic, or even normal, anxiety and often seems at ease in situations which would make the average person tense and apprehensive. Fox & Lippert (1963), using a technique developed by Lacey (1953, 1958), have demonstrated that sociopathic Ss have a lower rate of GSR fluctuations, with respect to non-sociopathic controls, when tested under resting conditions involving low stimulation levels. The present study is an extension attempting to investigate the autonomic functioning of the sociopath under conditions of controlled direct stimulation and stress.

Method

Two groups of 21 white, male, adolescent Ss were selected from the detention unit of the Hamilton County (Ohio) Juvenile Court. The Ss in one group were diagnosed sociopathic personality disturbance, anti-social type (SPD group); Ss in the other group were diagnosed adjustment reaction of adolescence with neither history nor current evidence of sociopathy (AR group).

Ss were taken individually to the experimental chamber, were seated in a comfortable chair, and had zinc palmer GSR electrodes attached to their hands. Each experimental session was of 1 hr.'s duration divided into five periods as follow: (1) 20 min. *adaptation period* during which the subject was allowed to acclimate to the surroundings, (2) 10 min. *rest period*, (3) 10 min. *stimulation period* during which randomly spaced strong visual (Strobotac light) and auditory (ringing telephone) stimuli were presented, (4) 10 min. *"stress" period* during which pseudo-electrodes were taped to the S's right calf (S was told that in exactly 10 min. he would receive a strong but harmless shock. A large clock was visible to the S so that the temporal proximity of the supposed shock could be observed. No shock was administered), (5) 10 min. *post-experimental adaptation* in which the leg electrodes were removed and S was allowed to rest without stimulation. GSR recordings (via Fels Dermohmmeter) were taken continuously throughout periods 2 through 5. These recordings were scored blind for absolute skin resistance,

frequency of spontaneous GSR changes of 600 ohms or more, and the magnitude of elicited GSRs.

All recordings and stimulus control equipment was housed in an adjacent room from which S was observed through a one-way mirror.

Results

With respect to basal conductance levels and magnitude of GSRs elicited by specific stimuli, the Ss in both groups produced quite similar records. No statistically significant differences in basal conductance between groups was demonstrated. ($F=1.16$; $df=1/40$; $p>.05$). The magnitude of GSRs elicited by the photic and aural stimuli were evaluated by converting absolute conductance changes to "lability scores" (Lacey, 1956). The mean lability scores for the SPD group and AR group were 52.1 and 51.7, respectively. The difference is not statistically significant ($\alpha=.05$).

Some differences in automatic activity between the AR and SPD groups were indicated in measurements other than basal conductance level, viz., (1) spontaneous GSR emissions, (2) anticipatory reactions, and (3) recovery.

Figure 1 shows indices of spontaneous GSR emission for both groups across experimental treatments. Or-

Fig. 1. Mean number of 20-sec. time intervals containing one or more spontaneous GSR drops of at least 600 ohms as a function of experimental periods.

dinate values are mean number of "active intervals" which are 20-sec. time segments containing one or more spontaneous decrease in resistance of 600 ohms or more.

The differences between group means are not statistically significant for the rest and stimulation periods ($\alpha = .05$). The mean number of active intervals during the stress ($\bar{X}_{AR} = 23.86$; $\bar{X}_{SPD} = 18.14$) and recovery ($\bar{X}_{AR} = 18.17$; $\bar{X}_{SPD} = 11.81$) periods were significantly different (Neuman-Keuls) with $p < .05$ and $p < .01$ respectively. At the end of the stress period, i.e., when the clock in S's chamber indicated shock was due, 12 members of the AR group displayed abrupt drops in skin resistance. None of the SPD group exhibited such an anticipatory response.

The most striking aspect of the SPD group's spontaneous GSR record was observed during the recovery period when the mean number of active intervals declined to 11.81 (see Fig. 1). This mean was significantly ($p < .01$) lower than the AR group mean ($\bar{X} = 18.71$) for the same experimental period, and even significantly ($p < .05$) lower than was exhibited by the SPD group, itself, during the pre-stimulation rest period.

Discussion

The presence of the sociopathic syndrome does not appear to affect basal skin resistance. The magnitude of elicited GSRs also seems quite similar for sociopathic and control Ss. With respect to spontaneous GSR changes sociopathic Ss differ from non-sociopathic controls in three major respects, (1) the rate of spontaneous GSR emissions is significantly lower than for non-sociopathic controls under conditions of shock threat stress, (2) sociopathic Ss do not emit spontaneous resistance decrements as an anticipatory response to shock, (3)

the sociopathic Ss return more rapidly, and to a lower level, of spontaneous GSR emission once the experimental manipulations are finished. It would seem that elicited autonomic responses for the sociopath are rather rigidly tied to concrete, objective events in the environment. He shows less tendency to respond in anticipation of future shock or to continue to respond after stimulation has passed. The internal mechanisms controlling spontaneous GSR appear for the sociopath to be less affected by stress associated with the expectancy of pain.

The results of this investigation suggest that the electrodermal regulatory system of sociopathic Ss is such that it responds only to concrete external events and that diffuse states of heightened "activation," commonly associated with emotions such as anxiety or apprehension, occur at a lower level than in control Ss. Such a pattern of autonomic functioning is consistent with clinical observations of sociopathic behavior.

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Note

1. The research reported here is a portion of the senior author's Ph.D. dissertation, University of Cincinnati, 1965.