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SELF-REPORTED FEARS AND ELECTRODERMAL RESPONSIVENESS OF HIGH AND LOW TRAIT ANXIOUS SUBJECTS TO FEAR OF FAILURE AND OTHER STRESSORS

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We examined the relationship between self-reported fears on the Wolpe-Lang Fear Survey Schedule and scores on the State-Trait Anxiety Inventory (STAI) among hospitalized male veterans and evaluated the effects of threat of failure and loss of self-esteem on the electrodermal activity of 32 male college students classified as high or low trait anxious. Results showed a significant relationship between trait anxiety and fearfulness with HA-trait individuals demonstrating greater overall fearfulness than those classified as LA-Trait with the most significant differences indicated for fears of failure. There were no differences in electrodermal activity between HA- and LA-Trait participants in response to manipulation of instructions designed to increase the level of A-State. Though high stress instructions involving ego and failure threat produced an increased frequency of nonspecific EDRs in both groups, there was no evidence that HA-Trait participants responded with any greater increase in electrodermal activity.

Keywords: fear of failure, stressors, self-reported fears, electrodermal responsiveness, anxiety.

Since Freud's (1924) description of anxiety neurosis, observers of behavior have been focused upon the concept of anxiety as fundamental to an explanation of abnormal behavior. More recently, Cattell and Scheier's (1961) factor analytic studies produced empirical evidence of two distinct anxiety factors labeled trait anxiety (A-Trait) and state anxiety (A-State). A-State has been described further by Spielberger and associates (Spielberger, 1966; Spielberger et al., 1970) as a transitory emotional state or condition characterized by subjectively perceived

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feelings of apprehension, tension, and worry, and heightened autonomic nervous system activity. A-State varies in intensity and fluctuates over time as a function of the amount, degree, or type of stressful stimuli impinging upon an individual and his cognitive appraisal of these stresses. A-Trait, however, is viewed as a relatively stable personality disposition of anxiety proneness which may be inferred from the frequency and intensity of elevations in A-State over time. Within this conceptual framework, it would be reasonable to assume that persons differing in A-Trait would also vary in the intensity and duration of A-State in response to situations perceived as threatening.

Though measures of anxiety are many, general measures of trait anxiety and the A-Trait Scale of the State-Trait Anxiety Inventory (STAI; Spielberger et al., 1970) are seen to reflect a tendency toward anxiety proneness in social situations (Spielberger, 1972). Specifically, it has been observed that individuals high in A-Trait are disposed to experience elevations in A-State in situations which pose threats to self-esteem or evaluate personal adequacy (Spielberger, 1966, 1972). Indeed, an extension of this logic suggests that high A-Trait (HA-Trait) individuals should perceive a greater variety of stimuli and stimulus conditions as threatening than do low A-Trait (LA-Trait) individuals, and that situations involving failure or loss of self-esteem should be particularly stressful. When confronted with a stressor involving threat of failure or loss of self-esteem, HA-Trait participants should also demonstrate a concomitant change in arousal as manifested by higher levels of autonomic activity than their LA-Trait counterparts.

Hodges and Felling (1970) provided support for this notion in a factor analytic study of the fears of college students which identified four factors: (1) Apprehension about classroom participation; (2) concern about social and academic failure; (3) apprehension in dating situations; and (4) concern over pain and physical danger. All but the last of these factors were significantly related to trait anxiety as measured by the STAI. Similarly, Kilpatrick and McLeod (1973) investigating fears of nursing students using the Wolpe-Lang (1964) Fear Survey Schedule (FSS III) reported that participants with high scores on the STAI A-Trait Scale were significantly more fearful than those with low A-Trait scores with a correlation coefficient of 0.52 between fearfulness and STAI A-Trait scores. Unfortunately, no differentiation was made between fears related to failure and loss of self-esteem and fears related to other stressors. In order to pursue this line of investigation and to examine more closely the concept of anxiety-as-process in which the components of stress, cognitive appraisal of anxiety, and possible physiological responses are the focus of interest, two experiments were conducted. The first studied the perception of possibly stressful stimuli and stimulus conditions among hospitalized male veterans characterized by HA- and LA-Trait scores, and the second experiment evaluated the effects of threat of failure and loss of self-esteem on the electrodermal activity of HA- and LA-Trait male college students.

EXPERIMENT I

PARTICIPANTS

Participants in the study were 211 male Vietnam era veterans hospitalized on medicine, surgery, and psychiatry wards ranging in age from 19 to 35 years. Although participation was voluntary, fewer than 1% of patients contacted declined.

PROCEDURE

All participants were administered the STAI A-Trait Scale and a 78-item form of the Wolpe-Lang Fear Survey Schedule III. Scoring of the FSS III yielded two classes of measure: (1) A Total Fearfulness Score (TFS) calculated by assigning 1 point to an item if it produced no disturbance and 5 points if it produced very much disturbance, thus making possible a range of scores of 78-390; and (2) Discrete fearfulness for 6 subscales, including Animal Fears (AF: 9 items); Tissue Damage Fears (TF: 19 items); Classical Fears (CF: 17 items); Social Interpersonal Fears (SF: 18 items); Miscellaneous Fears (MF: 11 items); and Failure/Loss of Self-esteem Fears (FF: 17 items). The FF scale was constructed by asking 5 VA mental health professionals to select independently FSS III items which they judged to be concerned with fear of failure or loss of self-esteem. Items were included on the FF scale only if selected by at least 4 of 5 judges. Items on the FF scale were drawn from those comprising other scales.

Individual scores on the STAI A-Trait Scale were rank ordered and the upper and lower quarter of scores selected to reflect HA-Trait (n = 56) and LA-Trait (n = 57) groups. Scores greater than 51.5 or lower than 32.5 were included in the data pool.

Discriminant function analyses were performed to determine the usefulness of the 7 fear variables in separating HA- and LA-Trait participants. Mean scores on each variable were determined for the separate groups and evaluated for statistical significance with unpaired t tests. Separate variance estimates were employed because of the inequality of group variances. The within-groups product-moment correlations between all variables were also calculated.

RESULTS

Comparison of mean Wolpe-Lang Fear Survey scores for HA-Trait and LA-Trait groups showed tendency for HA-Trait participants to be more fearful than LA-Trait participants on each of the 7 fear scales ($p < .001$). (These data, including mean scores, standard errors, and t scores for HA- and LA-Trait groups presented in tabular form, are available on request.) The most significant effect was found for FF, or failure/loss of self-esteem fears. Indeed, when the effects of this variable were removed in a stepwise analysis, none of the remaining fear scales added significantly to discrimination between the two groups. A discriminant analysis performed with only the FF variable as a discriminator yielded a discrimination function that misclassified only 8.8% of HA-Trait and 17.9% of LA-Trait participants.

The importance of the FF scale was further substantiated by inspection of a within groups correlation matrix including all fear survey variables and the A-Trait measure (also available in tabular form upon request). Although all fear variables were significantly interrelated, only Scales FF, SF, MF, and TFS correlated significantly with STAI A-Trait scores with the highest correlation found for subscale FF (r = 0.393). Since SF (r = 0.919), MF (r = 0.737), and TFS (r = 0.690) scores were substantially correlated with FF scores, removing the FF would reduce substantially the correlation effects of these scales with A-Trait scores.

EXPERIMENT II

PARTICIPANTS

A pool of 230 male college sophomores provided a population from which 16 high and 16 low anxious participants were selected. Individuals scoring at or above the 90th percentile or at or below the 10th percentile on the STAI formed the HA-and LA-Trait groups. All participants were volunteers and ranged in age from 18 to 21 years.

PROCEDURE

HA- and LA-Trait participants were randomly assigned to a high stress (HS) or a low stress (LS) condition and conducted individually to a sound-attenuated room. Electrodes for recording of exosomatic electrodermal activity were attached, and participants were told to rest quietly and await further instructions. Details concerning electrode placement, technical apparatus, and instructions are described fully in Kilpatrick (1972). After a resting period of 5 minutes, participants in the HS condition were informed that they would be required to perform problem-solving tasks as part of a test for brain damage which also measured intelligence, reasoning facility, and the ability to think abstractly. Participants in the LS condition were told that the purpose of the experiment was to investigate the relationships between task preferences and physiological variables and that, following their performance, they would be asked to rate the test in terms of how much they enjoyed it. Since it can be assumed that college students are concerned with an evaluation of their intellectual abilities, it was expected that the HS instructions would be perceived as more threatening and that the nature of the stress would be provocative of fear of personal failure and loss of self-esteem.

Exosomatic electrodermal activity was monitored throughout the experiment, and for purposes of data reduction, a nonspecific electrodermal response (EDR) was defined as a decrease in skin resistance of at least 100 ohms which occurred in the absence of any known stimulus input. The frequency of nonspecific EDRs was determined for each 1 minute segment of the 5 minute rest period and during the first minute following administration of HS and LS instructions.

Change in conductance scores (AC) were also computed by subtracting the highest conductance values obtained for each participant during administration of instructions from the level of conductance obtained immediately prior to the stress manipulation. These data were analyzed by means of three separate analyses of variance conducted on nonspecific EDRs during the period following instructions, on change scores obtained by subtracting nonspecific scores during the last minute of the first period from scores during the first 1 minute period following instructions, and on AC scores.

RESULTS

Inspection of mean nonspecific EDRs reveals that HS participants, whether HA- or LA-Trait, produced higher levels of postinstruction nonspecific electrodermal activity than did LS participants ($p < .01$). (These data, including results of associated tests of significance, are available in tabular form upon request.) However, results of the analyses of nonspecific EDR and change scores following stress showed neither a main effect due to anxiety nor significant interaction between anxiety and stress. Similarly, levels of anxiety did not produce a significant change in AC, stress, or the anxiety-stress interaction. Thus, findings indicate that the HS instructions involving ego and failure threat produced an increased frequency of nonspecific EDRs compared with the LS instructions. There was no evidence that HA-Trait participants responded to the HS instructions with any greater increase in electrodermal activity than did LA-Trait participants.

DISCUSSION

As predicted, there was a significant relationship between trait anxiety and fearfulness with HA-Trait individuals demonstrating greater overall fearfulness than LA-Trait participants. A more frequent perception of stimuli as threatening by HA-Trait participants was not limited to situations involving possible failure and loss of self-esteem. HA-Trait participants also exhibited more tissue damage fears, classical phobias, and miscellaneous fears. These data suggest that HA-Trait individuals are not only more susceptible to threats involving failure or loss of self-esteem but demonstrate greater general vulnerability to stressors of many sorts. However, the most significant differences between HA- and LA-Trait participants were found for fears of failure.

Although it was predicted that HA-Trait participants confronted with a stressor related to possible loss of self-esteem would demonstrate higher levels of A-State, changes in electrodermal activity were nonsignificant. While it might be hypothesized that the HS instructions were ineffective in creating concern regarding personal adequacy or fears of loss of self-esteem, both HA- and LA-Trait groups showed increased nonspecific EDR activity in response to HS instructions as opposed to those defined as LS. Another variable of importance might be the intensity level of the threat itself with the possibility being that moderate levels of stress might be more productive of predicted changes in electrodermal response. A

final possibility is that of response specificity (Lacey, 1950), which states that individuals respond to stress via different physiological systems. It might be argued that the present investigation may have been weighted with poor electrodermal responders, but this is unlikely in view of the significant nonspecific activity associated with presentation of HS instructions.

Present findings are consistent with work reported by Katkin (1965) and Miller and Shmavonian (1965) who found no electrodermal differences between HA- and LA-Trait participants using threat of electric shock. In a recent review, Stern and Janes (1973) commented on the general failure of investigators to find HA-Trait participants responding to stress with increased basal skin conductance or more frequent nonspecific EDRs in normal populations. Similarly, Hodges (1968), after presenting HA- and LA-Trait participants with physical and failure stressors, found no differential heart rate response to the two classes of stimuli. There was also no significant difference in cardiovascular response as a function of A-Trait status. HA-Trait participants did show the expected greater A-State response to failure threat when a self-support measure of anxiety was employed. These results suggest, verbal reports notwithstanding, that autonomic changes in A-State are difficult to demonstrate.

These findings raise several questions requiring additional research attention. For example, are individuals with high anxiety proneness characterized by a greater tendency to demonstrate autonomic signs of A-State when confronted with a potent stressor, or do they merely tend to perceive themselves introspectively as more susceptible to anxiety? Thus, do they differ from LA-Trait participants only in their inclination to interpret and label the same proprioceptive autonomic events as anxiety? While present data do not speak directly to these questions, such an interpretation is consistent with a large body of research findings.

Finally, it is suggested that a combination of FSS III and STAL data should allow prediction of A-State elevations in response to self-rated stressors. Thus, if given knowledge of self-rated fears as determined from FSS III, it should be possible to predict the occurrence of A-State. Indeed, if HA-Trait participants confronted with stressors rated as personally disturbing fail to show increases in A-State measured by both self-report and psychophysiological indices, considerable revisions of thinking with regard to the concept of anxiety would be in order.

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