

## PHYSIOLOGICAL AND PSYCHOLOGICAL ASPECTS OF ANXIETY IN PSYCHIATRIC PATIENTS AND NORMAL SUBJECTS

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### SUMMARY

Physiological (Skin conductance) and Psychological (State-trait anxiety) measures of anxiety were employed to assess the level of anxiety in 10 anxious neurotics, 10 schizophrenics and 10 normal subjects. Both the Physiological and Psychological measures were sensitive in detecting the level of anxiety in normals and patients. But interrelationships between these two measures were very poor.

Anxiety is a specific unpleasurable state of tension which indicates the presence of some danger to the organism (Weiss and English, 1950). It may be present in normal subjects as well as in patients. In the latter it may be present as a symptom (e.g., in schizophrenics, depressives) or as a syndrome (anxiety neurosis). The aspects of anxiety are many, ranging from the introspective to the objective physiological, but no one is free from its limitations. Thus, the use of self rating scales, e.g., to evaluate anxiety is subject to falsification for various reasons (Spielberger, 1972). That is to say, the use of self-rating scales to emotional states rests mainly upon what Wilder has called "inventory promise" (Spielberger, 1972). This is because the underlying assumption in its use is that the individuals are always motivated to describe their feelings exactly. In practice, however, it is often found that subjects, especially patients, show lack of motivation to understand items carefully and to fill in the forms properly. One possible way to obviate this difficulty is to use some objective, physiological measures. But there too findings are far from consistent. Using physiological measures, viz., Skin resistance (SR), higher than normal SR in anxious patients (Malmö

and Shagass, 1949) lower than normal SR in anxious patients (Howe, 1958) and no difference in SR between normal subjects and neurotic patients (Eysenck, 1956) have been reported in the literature. Such inconsistency in the reported findings could be because in some studies (Sherman and Jost, 1945) heterogeneous group of patients were examined under one broad head 'psycho-neurotic' or 'psychotic', whilst in some other (Wing, 1964) patients were exclusively with a primary diagnosis of 'anxiety-State'.

Though in recent years research interest in both the psychological and the physiological correlates of anxiety has increased, there are still substantial gaps in our knowledge. In this connection, Martin (1961) in a review article pointed out that, 'no studies were discovered in which several objectively measured behavioural characteristics were obtained simultaneously with a variety of Physiological conditions causing fear, tension, anxiety etc.' Therefore, it is necessary to measure several aspects of anxiety together and examine both the difference in the these measures from normals, and the inter-correlations between them.

The purpose of the present study was

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(a) to ascertain the relative sensitivity of both the objective physiological and subjective (self-rating) measures of anxiety in detecting the level of anxiety in patients having (i) anxiety as a symptom (Schizophrenics) and (ii) anxiety as a syndrome (anxious neurotics) when compared with matched normal controls, and (b) to determine the intercorrelations, if any, between these measures.

## METHODS

### *Subject:*

Ten male schizophrenics (mean age—23.5 yrs.), 10 male anxiety neurotics (mean age—23.2 yrs.) having had their first attack of illness and free from any organic pathology were selected from a local Psychiatric clinic. The patients were all drug free at the time of session.

Ten male post graduate students (mean age—22.5 yrs.), free from any psychiatric or neurological complaints acted as controls.

Age differences between groups were not statistically significant.

### *Materials used:*

- (1) *Psychological:* (a) Multiphasic Questionnaire (MPQ) (Murthy, 1965), (b) State-Trait Anxiety Inventory (STAI) (Self-evaluation questionnaire) (Spielberger *et al.*, 1970).
- (2) *Physiological:* 3 Channel Polyrith, manufactured by M/s. Inco, Ambala, India, and its accessories.

K-Y electrode Jelly. Ag-Ag CL, double element GSR electrodes (Lader and Wing, 1966).

### *Experimental conditions and procedure:*

On arrival each patient was thoroughly examined by the psychiatrist of the clinic. The diagnostic opinion of the Psychiatrist about the case following the diagnostic classification of DSM II, APA, 1968, was noted. Subsequently, a check on his diagnosis was made using a diagnostic tool,

named MPQ, devised in India (Murthy, 1965), by a psychologist who was double blind. When the diagnostic opinion tallied with that of the diagnostic impression obtained on MPQ, the patient was selected for the study. The normals were also selected following the same procedure.

Each patient/subject was brought in the experimental room and administered the STAI in a single session by a single investigator (SDG) following the standard procedure given by Spielberger *et al.* (1970). Subsequently, the subject was asked to lie down on a bed in the experimental room adjacent to the recording instrument for recording SR. External noise was controlled as far as practicable. The detailed procedures for instrument calibration and skin conductance recording has been described elsewhere (Chattopadhyay *et al.*, 1975 and 1980). To summarize: the subject was prepared for the experiment and skin resistance in resting condition was recorded for ten minutes.

t-test and correlation matrices were computed.

### *Analysis of the data:*

#### (1) Physiological.

SR: For each subject, the skin resistance level in Kilohms was read off the Polyrith tracing and then was converted into Log conductance value (in  $\mu$ mho), hereafter called skin conductance (SC).

#### (2) Psychological.

(a) STAI: These were scored following the standard procedure given by Spielberger *et al.* (1970). Each subject had two scores, one indicating his state anxiety (SA) and the other trait anxiety (TA).

(b) MPQ: This helps in determining the nature of loading of Clinically identifiable syndrome like, anxiety, depression, mania, schizophrenia etc. The cut off point for each of these scales, above which

an individual's score indicates pathology, was determined applying the procedure given by Murthy (1965).

## RESULTS

Results have been depicted in Table 1. From the table it was evident that the between group differences with regard to SA scores were not statistically significant.

TABLE 1. Mean and S. D. with 't' values of different variables in three groups.

Groups	Vari-ables	Trait	State	Skin
		An-xiety	An-xiety	Con-ductance (in $\mu$ mho)
Normal	.. Mean	27.2	35.8	0.69
	S.D.	8.4	11.3	0.34
Anxiety	.. Mean	62.0	43.6	1.08
	S.D.	9.6	9.6	0.34
Schizophrenia	.. Mean	52.6	30.6	1.29
	S.D.	8.7	3.8	0.14
<i>t' Values</i>				
Normal Vs. anxiety		8.2**	1.59	2.46**
Normal Vs. Schizophrenia.		6.30**	0.97	5.00**
Anxiety Vs. Schizophrenia		2.18*	1.17	1.62

\*— $p < 0.05$ , \*\*— $p < 0.01$

TA score was highest in the anxious neurotics and lowest in normals, the schizophrenics fell in between. The score obtained by the normals was far below and those by the patients were far above the norms provided by Spielberger *et al.* (1970) for this age group of normals and patients respectively. Between group differences were significant throughout.

On the contrary, schizophrenics obtained highest score in SC and the normals

lowest, whilst anxious patients fell in between. Anxious patient differed significantly ( $p < 0.05$ ) from the normals and so also the schizophrenics ( $p < 0.001$ ), though the magnitude of difference was higher with regard to the schizophrenics and normals, than those of anxious neurotics and normals. Between two groups of patients SC did not show any significant difference.

The correlation matrices showed non-significant positive relation between self-rating and physiological measures in all the three groups.

## DISCUSSION

The normal subjects were selected with proper enquiry (using TA score) that they all were less anxiety prone. Since the purpose of the present study was to examine the nature of anxiety that prevails in otherwise symptom free normal subjects and to compare this with those of patients having pathological anxiety, it was thought justified to eliminate high anxiety prone normal subjects so as to establish a non-contaminated base level for comparison of the obtained data. In our previous studies we have found that high anxious normal subjects (Chattopadhyay *et al.*, 1975) as well as normal subjects when made aroused experimentally (Chattopadhyay *et al.*, 1980) show similar trend of results like those of patients suffering from pathological anxiety.

Since, the subjects were naive about the experimental situation, the possibilities of contamination of findings due to laboratory anxiety (LA) should be eliminated. The best possible way to confirm the possibilities of such LA in the subjects would be to take their subjective report. Since the LA scores amongst the three groups of the subjects did not differ significantly, it was obvious that such situational anxiety (SA), if at all present, was similar in all the three groups. Therefore, between-group differences obtained in SC could be attributed

to the symptom cluster the patients were suffering from.

SC scores were indicative of presence of equally high anxiety and tension in both the patient groups. Since anxiety and tension are associated with increased sweat secretion, which in turn causes higher SC (Chattopadhyay *et al.*, 1975), both the patient groups would be expected to show higher SC and in this sense, our present findings are in the expected direction. SC being taken as an index of arousal (Lader and Wing, 1966), the present findings do suggest that anxiety is equally high in both schizophrenics and anxious neurotics. Similar findings with regard to anxious neurotics (Lader and Wing, 1966; Howe, 1958; Chattopadhyay *et al.*, 1975) and schizophrenics (Bemporad and Pinsker, 1974) in comparison to normals have been reported by others.

That our patients were highly anxious than the normals was also supported further from their TA scores (Table 1). Similar findings of higher TA in anxious neurotics and schizophrenics have been obtained in our previous study (Chattopadhyay *et al.*, 1979).

One internal inconsistency of the present finding is that anxious neurotics and schizophrenics showed same level of anxiety on physiological measure (Table 1), but a different level on the psychological measures (Table 1). If psychological and physiological measures both are equally sensitive in detecting level of anxiety in an individual, then unlike our present findings one would expect a consistent relationship throughout between anxiety scores obtained on these two measures. However, such inconsistency in the present findings could be because of high variability obtained in case of patients regarding their subjective evaluation of anxiety. No question of patients, even with normals, sometimes such inconsistency due to higher variability in their subjective appraisal of anxiety has been

reported (Katkin and McCubbin, 1969). Mandler *et al.* (1958) in this context pointed out that subjects used for psychological measures seemed 'notoriously' unable to identify or describe their autonomic activity. Moreover, previous findings using manifest anxiety (MA) scale have failed to relate physiological indicator of anxiety to MA scale scores (Katkin and McCubbin, 1969) and such inconsistent findings between physiological and psychological measures led Katkin (1965) to hypothesize that MA scales and the autonomic responses appeared to be independent. However, the correlations between physiological and psychological measures in the present study, though were not significant statistically, did show a positive direction. Thus, the prime question is to what extent a particular experimental situation would be expected to facilitate consistency between self report index and the autonomic measures.

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