Research Paper Medical Science

Correlation of Anxiety& Cold Pressor Test in Young Adults

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ABSTRACT

The present study was undertaken to find out the correlation between subjective and objective measure of anxiety with cold pressor test . A sample of 67 medical students, was drawn from the I MBBS batches and they were tested for subjective anxiety scores by using Rastogi' Self-evaluation scale for anxiety which measured three types of anxiety scores, state, trait and free-floating anxiety. These subjective anxiety scores were correlated with cold pressor test. The correlation of anxiety scores with cold pressor test showed that there is no statistically significant correlation between rise in systolic blood pressure and Anxiety state score (ASS), Anxiety trait score (ATS) and Free-floating anxiety score(AFS). Also there is no statistically significant correlation between rise in diastolic blood pressure and ASS, ATS and AFS. Hence cold pressor test is not a good objective measure of anxiety.

KEYWORDS Anxiety score, Cold pressor test,

Introduction:
The present age is an age of anxiety and stress. With advancement of knowledge, the need to learn more and retain more in a limited life-span has gained importance. This limitation of time has given rise to more anxiety. Therefore the need to study anxiety and all factors associated with it.

"Anxiety is the individual's reaction to the invasion of his conscious mind by irrational forces and images from the collective unconscious which serve as a threat to the orderly, stable existence of the individual", said Jung(1956)[1] in his definition of anxiety.

Giving importance to the stimulus of drive and considering its energizing function in their theory, some psychologists conducted studies relating anxiety with academic performance. They found that high anxiety groups are clearly superior in academic performance to the low anxiety groups.[2,3]

In today's cut-throat competition this theory holds great relevance for those individuals who strive for success. Anxiety for them acts as a driving force to better their performance.

Viewing both schools of thought the logical conclusion one can draw is that anxiety within reasonable limits inspires and drives the individual to reach the heights of excellence but once it exceeds these limits its unpleasant influence acts as a deterrent to the progress.

Since Freud's conceptualization of anxiety in 1894,clinical studies on anxiety have been conducted with increasing regularity[4]. There are two distinct aspects to the measurement of anxiety. Psychological tests are used with statements based on symptoms experienced during anxious states. These measure self-estimated subjective anxiety scores.

Anxiety being such an intense emotion is accompanied by a rise in arousal level and stimulation of the autonomic nervous system. As a result there is change in physiological parameters. These changes indicate the person's reactivity to stressful conditions. Examples of such parameters are changes in blood pressure, cardiac output, cold pressor test, stomach acid output and salivary secretion etc .[5]

The cold pressor test devised by Hines and Brown[6] involves exposure of the individual to cold as a stressful stimulus. The reaction of the individual to this is measured by the change in his systolic and diastolic blood pressures after the exposure to cold stress.

Medical students form a group that is required to perform at high levels of mental competence. They are required to take tough tests to gain admission to the course and are then subject to the unrelenting task of learning innumerable facts and to recall them at a moment's notice. Hence they are ideal to study the subjective anxiety scores and correlate them with an objective measure of anxiety like Cold pressor test.

To measure the anxiety scores, anxiety state score (ASS), anxiety trait score (ATS) and free-floating anxiety score (AFS) and to correlate these anxiety scores with Cold pressor test response in young Medical students.

Materials and Methods
The present study was undertaken in the Department of Physiology, Government Medical College, Jabalpur from June 1995 to July 1996. A sample of 67 medical students, 36 males and 31 females, between the ages of 17 and 20 years was drawn from the I MBBS batches. The students were subjected to Anxiety tests and cold pressor test

For Anxiety tests Rastogi's self-evealuation scale for anxiety state, anxiety trait and free floating anxiety levels was used[7]. This test had three sections - Anxiety state score (ASS) : This part of the test had 20 statements pertaining to the transitory emotional state of the individual at the time of performance of the test. Anxiety trait score (ATS) : There were 28 statements in this section which were based on relatively stable personality disposition of the individual. Free-floating anxiety score (AFS): This section had 24 items which presented symptoms encountered in anxious patients that were "objectless" or "free-floating".

Scoring of the test:
All the sections had some statements that were positive for anxiety, showing the subject to be anxious. Some statements were negative for anxiety showing the subject to be devoid of anxiety and in a relaxed state of mind. There were five response categories against each statement and were numbered serially from 1 to 5. The subject chose only one response to each item. In case of items positive for anxiety the weights assigned were the same as the numerals of the respons-

es whereas in case of statements negative for anxiety, the weights assigned were the reverse of the numerals.

The final scores of each section were obtained by the sum of the weights given to each item. For a meaningful interpretation of the scores, the subjects were divided into five groups on the basis of the tables provided for each section of the test. The five groups were "average", "high", "very high", "low" and "very low". For the purpose of this study high and very high anxiety groups were grouped as "high" and low and very low anxiety groups were grouped as "low" thus forming three continuous groups of high, average and low anxiety levels.

Cold pressor test:
This test used cold as a stressful stimulus. The response of the subject was measured by the change in blood pressure after the application of cold stimulus.[6]

The initial blood pressure of the subjects recorded by sphygmomanometer was noted as the "casual blood pressure". The subject was then asked to rest in supine position for 10 minutes in a calm, quiet and comfortable room. The blood pressure recorded after rest was noted as "basal blood pressure". With the cuff of the sphygmomanometer in position on the right arm, the left hand of the subject was immersed in ice cold water at a temperature of 4degrees centigrade for a period of exactly one minute or till it is tolerable. The blood pressure recorded immediately after removal of the left hand from the water was noted as blood pressure after cold stress.

The subjects were divided into Normoreactors and Hyperreactors based on the following criteria: Normoreactors : The subjects who showed a rise in systolic blood pressure less than 20 mm of Hg and rise in diastolic blood pressure less than 15 mm of Hg following cold stress. Hyperreactors : The subjects who showed a rise in systolic blood pressure more than 20 mm of Hg and / or a rise in diastolic blood pressure more than 15 mm of Hg following cold stress.

Results:
Table no : 1 showing Correlation between Anxiety state scores and Cold pressor test response

Sr no	Observation	r value	t value	
1.	Rise in systolic BP after cold stress	0.0386	0.311	NS
2.	Rise in diastolic BP after cold stress	0.1571	1.282	NS

Table showed that Correlation between Anxiety state scores and Cold pressor test response

was not significant statistically

Table no 2: Correlation between Anxiety trait scores and Cold pressor test response

Sr no	Observation	r value	t value	Sig
1.	Rise in systolic BP after cold stress	0.0118	0.095	NS
2.	Rise in diastolic BP after cold stress	0.1066	0.864	NS

Table showed that Correlation between Anxiety trait scores and Cold pressor test response

was not significant statistically.

Table no 3 Correlation between free-floating anxiety scores and Cold pressor test response:

Sr no	Observation	r value	t value	Sig
1.	Rise in systolic BP after cold stress	0.0381	0.307	NS
2.	Rise in diastolic BP after cold stress	0.1750	1.432	NS

Table showed show that Correlation between free-floating anxiety scores and Cold pressor test response was not significant statistically.

Discussion
Results (Table 1,2,3)showed that correlation between Anxiety state scores, Anxiety trait scores , free-floating anxiety scores and Cold pressor test response was not significant statistically respectively.

Anxiety of an individual has three facets to it. First is the anxiety state which denotes the existing anxiety level of the individual while he is undertaking a task in hand. This form of anxiety is likely to affect his performance while doing the task. Second is anxiety trait that is the habit of being anxious in general. This type of anxiety prepares the individual to undertake the given task with alertness and to avoid pitfalls while doing the task. Third is the free-floating anxiety which represents anxiety at a given moment but unrelated to the given task. A person maybe distracted because of the anxiety or may not be able to disregard the cause of anxiety while doing the given task. Of the three types of anxiety, the anxiety trait is likely to be the most important factor which will decide a person's overall performance.[8]

Many subjective and objective tests have been devised to measure all aspects of anxiety. This study was designed to correlate the psychological test with physiological measures of anxiety and to establish a firmer relation between the two types of tests. No statistically significant correlation could be found between the subjective anxiety test and cold pressor test.

The anxiety levels measured by Rastogi's Self-evaluation scale for anxiety state, trait and free-floating anxiety in male and female subjects are similar hence these two populations can be regarded as one with respect to anxiety. The rise in blood pressure after cold stress in males and females are also not significantly different hence males and females are similar with respect to cold pressor test in this study.

REFERENCES

1. Jung, C. J., Psychology of the Collective Unconscious, Regan Paul and Co. Ltd, First Edition, 1968; 78-79. | 2. Spence, K. W. and Haggard, quoted by Upadhyay, Sripathy, Anxiety a multidimensional study, Rupa Psychology Centre, First Edition, 1978; 65-66. | 3. Spence, K. W. and Taylor, J. Psychology of Learning and Motivation, Mc Graw Hill, First Edition, 1971; 13. | 4. Euler quoted by Upadhyay, Sripathy, Anxiety, a multidimensional study, Rupa Psychology Centre, First Edition, 1978; 128. | 5. Malmo and Amsel, quoted by Upadhyay, Sripathy, Anxiety, a multidimensional study, Rupa Psychology Centre, First Edition, 1978 ; 125. | 6. Hines, E. A. and Brown, G. E., A standard test for measuring the variability of blood pressure. Its significance as an index of the pre-hypertensive state, Ann. Int. Med, 1933; 7, 209. | 7. Tripathi, R. R., Rastogi Ambar, Manual for Self-evaluation scale of A-state, A-trait and A- free-floating, | Oct 1986; 7-10. | 8. Sarason, I. G., Personality and Objective Approach, Mc Graw Hill, 1968; |