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Bi-directional Relationship between T-Anxiety and Self Esteem: An Empirical Research with Indian College Students

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Abstract:
College life is a period with major transitions in various realms, which can be both taken up as challenges or threats. Self esteem levels of the person also help or hinder the management of such challenges. Present research work aimed to find out the relationship between levels of Trait anxiety and Self esteem of Indian college students. Also, to find out if there exists a gender difference in their Trait Anxiety levels. A relationship between reductions in self esteem and resultant S-Anxiety reactions was also studied. 150 college students incorporating 77 females and 73 males participated in the study from various educational institutes of India. A mixed methodology was adopted: Spielberger's State Trait Anxiety Inventory and Coopersmith self esteem inventory were administered to assess levels of Trait anxiety and Self esteem respectively; Critical incident technique was employed with 40% of the sample to analyse the S-Anxiety alleviations faced during life episodes reducing a person's self esteem. The findings revealed that there is a strong bi-directional relationship between T-Anxiety and Self esteem of both male and female college students. Moreover, no significant gender difference is there in levels of T-Anxiety. It was also revealed that cognitive reactions/symptoms of S-Anxiety such as Reduction in confidence, nervousness and suicidal thoughts are most common when students go through life episodes reducing their self esteem. Based on the bi-directional relationship found in the present research, an improvement in one would automatically bring an improvement in other for Indian college students.

Keywords: Trait Anxiety, State Anxiety, Self Esteem, Indian college students

1. Introduction
Anxiety has become a pervasive part of every body's life today. Irrespective of age, gender, occupation status and other demographics, anxiety has strongly invaded human life. A study conducted to assess the national prevalence rates of major mental disorders in India, found that the most widely prevalent disorders are depression and anxiety, with a rate of 18.5 per 1000 people suffering from anxiety neurosis (Murali 2005).

In the light of increasing levels of anxiety amongst the population, it becomes all the more important to study causes as well as the consequences of high levels of anxiety. Anxiety research is conducted within two separate traditions: (a) as an acute emotion and as a personality construct, and (b) as a mental disorder or an illness. In the present research paper the focus is on the initial tradition of anxiety research in which the construct of anxiety has been studied as both an acute emotion in terms of S-Anxiety and as a personality construct; T-Anxiety.

The concepts of state and trait anxiety were first introduced by Cattell (1966) and have been elaborated by Spielberger (1979). In general, personality states may be regarded as temporal cross sections in the stream of life of a person (Thorne 1966), and emotional reactions as expressions of personality states (Spielberger 1972).

Trait-Anxiety (T-Anxiety) refers to relatively stable individual differences in anxiety-proneness, that is, to differences between people in the tendency to perceive stressful situation as dangerous or threatening and to respond to such situations with elevations in the intensity of their state anxiety (S-Anxiety) reactions. The stronger the anxiety trait; more is the probability of that individual experiencing more intense elevations in S-Anxiety in a threatening situation.

State anxiety is as an unpleasant emotional arousal in face of threatening demands or dangers. It can be characterized by subjective feelings of tension, apprehension, nervousness, and worry and by activation or arousal of the autonomic nervous system.

State and Trait-Anxiety have been found to vary between genders and among various age groups. In a research, four meta-analyses were conducted to examine gender differences in personality in the literature (1958-1992) and in normative data for well-known personality inventories (1940-1992). Anxiety was also an aspect of personality studied and it was found that females have higher levels of anxiety across age groups, educational levels and countries as compared to males (Feingold 1994). A recent cross

cultural research among college students found American college women score higher on T-Anxiety as compared to men. Turkish and Mexican women scored higher, on average, than their respective male counterparts on both S and T anxiety (Baloğlu et.al. 2007).

2. Negative Impacts of High T-Anxiety
High T-Anxiety has been proven to be detrimental for a person in various ways. It has been found out that it negatively impacts the person's performance at various tasks.

Previous researches have proven that the people with high T-Anxiety tend to selectively attend to threatening stimuli. It has long being associated with a preferential biasing of resources towards the processing of threat-laden information, such as to angry and fearful faces, or threatening words (Yiend 2010; Bar-Haim et al. 2007; Fox et al. 2001). Based on this, researchers have found detrimental effects of task irrelevant threat distracters on various task performances (Bar-Haim et al. 2007, 2010; Fox et al. 2008; Mathews et al. 2003).

The Yerkes-Dodson law (Yerkes&Dodson 1908) that states a curvilinear relationship between arousal and performance is universally accepted. Related to it, a research study has found out that high T-Anxiety individuals indulge into a negative cognitive interpretation of S- anxiety that they are facing during a challenging task, as a result they tend to interpret it less positively compared with low T-Anxiety individuals, therefore, they experience more deficits in both performance efficiency and effectiveness (Eysenck & Calvo 1992).

Though, historically researchers have made efforts to see the ill effects of high T-Anxiety on performance at varied tasks. But not much work has been done on the impact of having high T-anxiety over individual's self perception and evaluation.

Although, Schwarzer (1996) found that worry is negatively correlated (r ˜.50) with perceived self-efficacy. Individuals who do not feel competent to cope with challenging demands harbour self-doubts and worry. However, worry is more an aspect of S- anxiety rather than T-Anxiety.

In a latest research it was found that people with high T- anxiety tend to have a greater tendency to use negative vocabulary to construct their self-frame and tended to choose conservative plans while making decisions (Peng et al. 2014)

Another research which states that persons high in T-Anxiety generally respond with greater elevations in S-Anxiety to threats to self esteem than do low T-Anxiety individuals (Spielberger 1972) only indirectly relate T-anxiety with self esteem.

Thus, there has not been much research done on the impact of T-Anxiety over an individual's Self. The present research work focuses on the impact of high T-Anxiety on college students' Self esteem. The experiences of college years are crucial for a person in terms of his/her development. There are many social and psychological challenges during this time period, which might strongly impact a person's self esteem. Though there are many researches done on the concept of self esteem, but there has been a dearth of research work done on Indian students in the sphere of anxiety, both S and T. Thus, the present study brings the two constructs together to understand a cause effect relationship between them among Indian college students; males and females.

3. Method

3.1. Objectives
Based on the introduction, there are three objectives of the present study:
- To find out the relationship between levels of T- anxiety and Self esteem;
- To determine gender differences (if any) in levels of T- anxiety as well as the relationship between T- anxiety and Self Esteem;
- To determine the most prevalent symptoms of S-Anxiety that the sample suffered during the life events (that has led to) reducing their self esteem

It is one-shot cross sectional survey-cum-correlation study design. A mixed method has been used encompassing both quantitative and qualitative techniques of data collection.

Quantitative method: Two questionnaires namely, State-Trait Anxiety Inventory and Coopersmith Self Esteem inventory have been used for assessing T-Anxiety and Self esteem of the sample respectively.

Qualitative Method: Critical incident technique has been used with 40% of the sample to assess the symptoms of S- anxiety that they experienced during the most impactful life events that reduced their self esteem.

Data collected has been analyzed by employing descriptive and inferential statistical techniques, thematic analysis and content analysis.

3.2. Questionnaires
State and Trait-Anxiety Inventory (STAI), Form Y developed by Spielberger in 1983 was used to assess the T-Anxiety levels of the sample. It comprises separate self-report scales for measuring state and trait-Anxiety. The S-Anxiety scale (STAI Form Y-1) consists of twenty statements that evaluate how respondents feel 'right now', at this moment. The T-Anxiety scale (STAI Form Y-2) consists of twenty statements that assess how people 'generally feel'.

The psychometric properties of the scale are quite strong. The test-retest correlations for the T-Anxiety scale are reasonably high for the college students, ranging from .73 to .86.

Coopersmith Self esteem inventory, The Adult form was used to assess Self Esteem of the sample. It is a revised version of the test first developed by Stanley Coopersmith in 1975. The test is designed to measure evaluative attitudes towards the self in school, academic, family and personal areas of experience. In relation to the test, the term "self esteem" refers to an expression of

approval or disapproval, indicating the extent to which a person believes him or herself competent, successful, significant and worthy. Self esteem is a personal judgement of worthiness expressed in the attitudes a person holds towards the self.

Since its development, the SEI has been administered to tens of thousands of children and adults participating in research studies or in special educational or clinical programs to enhance self esteem. All sociological and many cultural groups have been represented. From a review of studies conducted from 1970 through 1979, the test has been found to be highly reliable and valid (Gilbert, 1981).

3.3. Sample
The sample comprised of college students chosen randomly from various educational institutes in India. The sample size was 150 participants, out of which 77 were females and 73 were males. All the respondents were within the age group of 18 to 23years.

3.4. Hypotheses
The following hypotheses were formulated:
- **Hypothesis 1**: There would be a significant relationship between levels of T-Anxiety and Self esteem for the overall sample.
- **Hypothesis 1a**: There would be a significant relationship between levels of T-Anxiety and Self esteem of female college students.
- **Hypothesis 1b**: There would be a significant relationship between the levels of T-Anxiety and Self esteem of male college students.
- **Hypothesis 2**: There would be a significant gender difference in the levels of T-Anxiety of college students.
- **Hypothesis 3**: There would be experience of S- anxiety during life events reducing Self esteem for the overall sample.

4. Data Collection and Analysis
Data collection began with filling of the questionnaires which were administered with the help of acquaintances of the researchers. Confidentiality of individual responses was assured to all respondents. Once three quarters of the sample had filled the questionnaires, Critical incident technique was applied. Incident narrators were chosen randomly from the existing pool of respondents. They were asked to narrate a personal experience, if any, of having faced any incident in their life which had drastically reduced their Self Esteem. It was also emphasised that they express fully how they felt, both physically and psychologically as well as their behavioural reactions to the event.

Comparisons between male and female students were made on their levels of T-Anxiety using t test for independent means. Further, Pearson's correlation was found between levels of T-Anxiety and Self esteem for the entire sample as well as for males and females separately. With significant correlation values, Regression was employed to test the cause-effect relationship between the two variables.

Critical Incidents were content analysed for the entire sample to assess the relationship between S-Anxiety and Self esteem, in terms of most prevalent symptoms/reactions of S-Anxiety surfacing during life episodes leading to reduction of self esteem.

5. Result and Discussion

	Self Esteem
T-Anxiety (n=150)	-.631[†]
T-Anxiety (Males, n=73)	-.593[†]
T-Anxiety (Females, n=77)	-.671[†]

Table 1: Inter correlations between the levels of T-Anxiety with Self esteem
for males and females separately as well as for the entire sample combined.
([†]r value significant to 0.000)

Table 1 depicts the inter correlations between the levels of T-Anxiety with Self esteem for males (n=73) and females (n=77) separately as well as for the entire sample combined (n=150).

From calculated correlation values it can be observed that there exist strong significant correlations between the two variables, namely, T-Anxiety and Self esteem for the overall sample (r = -.631 significant at .000 level) as well as for males (r = -.593 significant at .000 level) and females (r = -.671 significant at .000 level) separately. Thus, Hypothesis 1, 1a and 1b are accepted with strong negative correlation found between the two variables of the study.

Further, step wise regression analysis was employed to understand the cause –effect relationship between the variables.

	Self Esteem (Dependent Variable)				
	R	R2	△ R2	F	p
T-Anxiety (Total Sample, n=150)	.631	.399	.399	98.068†	.000
T-Anxiety (Males, n=73)	.594	.352	.352	38.643†	.000
T-Anxiety (Females, n=77)	.671	.450	.450	61.479†	.000

Table 2: Step wise Regression analysis for T-Anxiety and its impact on Self esteem among males, females and the total sample.
†F value significant to 0.000

	T-Anxiety (Dependent Variable)				
	R	R2	△ R2	F	p
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Self Esteem (Females, n=77)	.671	.450	.450	61.479†	.000

Table 3: Step wise Regression analysis for Self Esteem and its impact on T-Anxiety among males, females and the total sample.
†F value significant to 0.000

Tables 2 and 3 depict the significant values of step wise regression found for the overall sample, as well as for males and females separately.

Among the two tables, Table 2 shows the regression values when Self esteem is taken as the dependent variable while T-Anxiety is the predictor variable. Table 3 shows the regression values when T-Anxiety is taken as the dependent variable while Self esteem is the predictor variable.

The results from table 2 depicts that levels of T-Anxiety is a significant predictor for the self esteem of the overall sample (F= 98.068 significant at .000 level) as well as for both males (F= 38.643 significant at .000 level) and females (F= 61.479 significant at .000 level).

Thus, the college students irrespective of the gender having high levels of T-Anxiety tend to have low levels of Self esteem.

The results from table 3 depicts that levels of Self esteem is a significant predictor for T-Anxiety for the overall sample (F= 98.068 significant at .000 level) as well as for both males (F= 38.643 significant at .000 level) and females (F= 61.479 significant at .000 level).

Therefore, it was found that both; the levels of T-Anxiety as well as Self esteem are impacting each other for college students, both males and females. Thus, the two variables have a bi-directional relationship with each other.

College students having high levels of T-Anxiety would tend to have lower levels of self esteem. On the other hand college students with low levels of self esteem would tend to develop high T-Anxiety levels. There is a negative correlation between the two variables (Table 1) which is leading to an inverse relationship.

It has often been found that people with high levels of T-Anxiety have a tendency to selectively attend to negative stimuli in their environment (Yiend 2010; Bar-Haim et al. 2007; Fox et al. 2001). Circumstances in which personal adequacy is evaluated are more likely to be perceived as threatening by individuals who are high in T-anxiety than by people low in T- anxiety (Spielberger, 1972).

Thus, it seems that it becomes a vicious circle for a college student, if s/he already has high levels of T-Anxiety; s/he becomes prone to reduction in self esteem levels due to the reasons stated in researches. Also as this age is a transitory age in which there are multiple changes and challenges coming to a person's life in academics, career, relationships etc., a person tends to become prone to high levels of T-Anxiety, especially those who have low levels of self esteem.

These findings can be utilised to improve the levels of both self esteem and T-anxiety among Indian college students by providing interventions in either of the two variables.

	Males (n=73)		Females (n=77)		t-value
	Mean	S.D.	Mean	S.D.	-1.035
T-Anxiety	42.81	9.42	44.30	8.19	

Table 4: Mean values, Standard deviation values and significance of difference between males and females on T-Anxiety.
[*]t value significant to 0.05, [**]t value significant to 0.01

Table 4 presents the values of mean and standard deviation for males (n=73) and females (n=77) and significance of difference between them on T-Anxiety.

The results depict that the t calculated is insignificant (t= -1.035, p=.302). Hypothesis 2 is rejected as no significant difference is found between the male and female college students in their levels of T-Anxiety.

The results negate the findings of the previous researches that have often found gender differences in levels of T-Anxiety with females having higher levels as compared to men (Feingold 1994; Nakazato & Shimonaka 1989).

However, based on the mean values alone, it can be seen that females with the mean of 44.30 have a slightly higher level of T-Anxiety in comparison to males having a mean of 42.81.

Alongside the quantitative data collection and analysis, the relationship between reductions in Self esteem with the elevations in S-Anxiety of individuals was also studied using qualitative method. Critical incident technique was utilised to gather data, in which 40% of the sample were asked to narrate most critical incident of their life that reduced their self esteem. They were asked to elaborate all the negative emotions, inabilities, physical changes and behaviour/actions they felt or indulged into during that event.

Behavioral	%	Emotional	%	Cognitive	%	Physical	%
Becoming Blank	20.8	Embarrassment	26.9	Reduction in Confidence	23.4	Shivering	23.5
Social Withdrawal	20.8	Fearful	22.9	Nervousness	14.8	Numbness in body parts	17.6
Display of Physical Aggression	12.4	Feeling Helpless	15.3	Suicidal Thoughts	10.6	Increased Pulse Rate	11.6
Shocked	8.3	Intense Sadness	11.5	Ashamed	8.5	Breathlessness	11.6
Smoking/drinking	8.1	Repressed	11.5	Shattered	6.3	Headache	5.8
Overt Restlessness	4.1	Feeling Ignored	7.6	Confused	6.3	Shaky legs (jittery)	5.8
Sublimation	4.1	Oversensitivity	3.8	Covert Restlessness	6.2	Exhausted	5.8
Panic Stricken	4.1			Self Hatred	4.2	Sweaty	5.8
Rejection of Social Suggestion	4.1			Lack of Concentration	4.2	Insomnia	5.8
Awkward	4.1			Feeling Conscious about self	2.1	Physical Breakdown	5.8
Stubborn	4.1			Disappointment with self	2.1		
				Self Doubt	2.1		
				Poor Decision Making	2.1		

		Overanalyzing Situation	2.1	
		Developing Negative Images in Mind	2.1	
		Traumatized	2.1	
		De-Motivation	2.1	
		Demoralized	2.1	

Table 5: Themes based on Qualitative data: Symptoms/Reactions of S-Anxiety to life events reducing self esteem (n = 60)

Further, as the data was collected, it was content analysed. The responses of the participants were categorised in four major themes in terms of S-Anxiety symptoms/reactions experienced by them. It was also observed that the incidents narrated ranged from age 3 to present. With most number of incidents narrated, ranging in the age group of 16-18.

Some early research work has also found similar age group of late teens to be quite susceptible to negative effects on self esteem in other countries (Kling, Hyde, Showers & Buswell 1999). Harter (1999) has said that the number of domains of self concept that have relevance for the development of self esteem increase with age from early childhood to late adulthood.

Table 5 is a list of observed themes and sub themes that have been categorised into four heads namely, Behavioural, Emotional, Cognitive and Physical symptoms/reactions of S-Anxiety faced during instances of reduced self esteem.

The most common critical life events reported; that reduced the subjects' self esteem were related to the academic pressures faced by them, inability to address the audience, relationship failure in terms of love interest and ragging/bullying at hostel.

The subjects were asked to elaborate upon the accompanying symptoms of anxiety during these life events. For the purpose of analysis, the narratives were content analysed and four categories of symptoms were developed proving Hypothesis 3 i.e. there would be experience of S- anxiety during life events reducing Self esteem for the overall sample.

Overall percentages for the four symptoms were calculated by dividing the number of responses under each symptom by total number of responses (adding responses of all four symptoms) multiplied by 100. Such as; Number of Behavioural responses / Total responses (Behavioural+Emotional+Cognitive+Physical) X 100 = Percentage of Behavioural symptoms.

 For each sub symptom category within each of the four major symptoms, again percentages were calculated by dividing the number of responses in that sub symptom upon the total responses in that major symptom multiplied by 100.

It was observed that Cognitive symptoms of S-Anxiety were most salient with an overall 36.63% of the participants reporting them. In comparison, other symptoms such as emotional were reported by 25.74%, behavioural by 20.79% and least experienced were the physical symptoms reported by 16.83% of the participants.

Among the cognitive symptoms, most prevalent were Reduction in confidence (experienced by 23.4%), nervousness (experienced by 14.8%) and suicidal thoughts (experienced by 10.6%). (Table 5)

The most commonly faced emotional symptoms were embarrassment (experienced by 26.9%), Fearfulness (experienced by 22.9%), Helplessness (experienced by 15.3%). (Table 5)

For the behavioural symptoms, becoming blank (experienced by 20.8%), social withdrawal (experienced by 20.8%) and display of physical aggression (experienced by 12.4%) were most commonly experienced. (Table 5)

Lastly, most common physical symptoms of S-Anxiety were found to be shivering (experienced by 23.5%), numbness of body parts (experienced by 17.6%) and increased pulse rate (experienced by 11.6%). (Table 5)

Though, Cognitive symptoms/reactions were found to be most pervasive among the four major themes. But if sub themes are observed individually, then Embarrassment (an emotional symptom) was experienced by most number of participants (26.9%).

 Hence based on data provided in Table 5, an important observation that could be made from the qualitative analysis is; life incidents reducing a person's self esteem do lead to elevated levels of S-Anxiety in variety of forms such as cognitive, emotional, behavioural and physical symptoms, thus, accepting Hypothesis 3.

6. Implications of the Study

In the present study it has been found that college students with high levels of T-Anxiety tend to have low self esteem. But at the same time if their self esteem level is low, it in turn leads to high levels of T-Anxiety.

Appropriate levels of both T-Anxiety and self esteem are important in everybody's life. It has been often found that elevated T-Anxiety hampers an individual's performance in varied tasks. They are also more prone to hypertension and coronary heart diseases (Crane 1981; Rosenman & Chesney 1980; Bloom 1979; Whitehead et al. 1977). Sckocken et al. (1987) have reported higher T- anxiety in younger males with chest pain.

Similarly, low levels of self esteem can have devastating impact on a person's life. Low self esteem has been found to be related to aggression and anti-social behaviour (Donnellan et al. 2005). Levels of *self-esteem impact cardiac vagal tone, the degree of influence on the heart by the vagus, a primary nerve of the parasympathetic nervous system* (Martens et al. 2008).

Based on the present findings if the levels of either of the two variables, namely, T-Anxiety and Self esteem are improved, the other would also be positively changed as both are having a reciprocal impact on each other for college students (Tables 3 & 4)

Research has found various ways of reducing levels of T-Anxiety such as exercise (e.g., O'Connor, Raglin & Martinsen 2000; Salmon 2001; Rothman 2010), Yoga based lifestyle interventions (Gupta et al. 2006) and Transcendental Meditation technique (TM) (Orme-Johnson & Barnes 2013).

On the other hand, to increase a person's level of self esteem, his/her worth and competence can be enhanced through Self esteem improvement workshops with groups of people suffering from low self esteem. Such group interactions can offer a sense of camaraderie and support through seeing how others suffer from low self esteem and witnessing their struggles to gain it (Mruk 2006).

Thus, there are multiple ways of improving both T-Anxiety and Self esteem for college students. Convenience has increased as improvement in one should lead to an automatic improvement in other as per the present findings (Tables 3 & 4).

It has also been found that life events negatively impacting a person's self esteem are followed by elevations in S-Anxiety in form of varied negative reactions. Most common being poor cognitive reactions, which even include suicidal thoughts.

Regular workshops and seminars should be provided to school children, adolescents and college students over managing stressful life events, importance of self esteem and ways of maintaining high levels of self esteem. This could reduce instances of S-Anxiety alleviations resulting from episodes damaging self esteem.

7. Conclusion

Thus, we may conclude that T- Anxiety and Self esteem are two highly negatively correlated variables among Indian college students. There is a bi-directional relationship between them; a positive change in either would bring a positive change in the other and vice versa. However, a relationship has also been found between reduction in self esteem and its impact on elevated S-Anxiety reactions in terms of cognitive, emotional, behavioural and physical negative reactions. Also, no significant gender difference has been found in the levels of T-Anxiety among college students.

8. Acknowledgement

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