

The State and Trait Anxiety and Eating Attitudes : An Examination of Factor Analysis

Dr. Susmita Chatterjee^[1]Dr. Himani Bhattacharya^[2]**Abstract:**

The physical and psychological development amongst adolescents is utmost necessary for any society as this is the most crucial stage of life. The study is done to establish relationship between state anxiety and trait anxiety with eating attitude, which will give direction for measures taken at the individual level as well as at societal level. The factor structure and concurrent validity of State anxiety and Trait anxiety and the Eating attitude-26 were examined in students of different departments of Rabindra Bharati University. We had employed the multivariate tool, confirmatory factor analysis to examine factor structure of State Anxiety, Trait Anxiety, Eating Attitudes and also examine the relationship between State and Trait Anxiety (both reverse and non-reverse type) and other factors of Eating attitudes. The sample size was 200. Here the model fits well and a significant relationship between State and Trait Anxiety and the Eating Attitudes has been found. For data collection of the study, the individual identification form prepared in accordance with relevant literature, State and Trait Anxiety Inventory (STAI) and Eating attitudes (Eat- 26, Garner) scales were applied among adolescent students. The empirical research revealed the influence of state and trait anxiety with eating attitude.

Keywords: The State and Trait anxiety, Adolescents, Eating Attitude, Diet habit.

I. INTRODUCTION

Anxiety is a common symptom found in different population especially among students. Every one experiences anxiety is a greater or lesser degree. Anxiety is a multi-dimensional concept also. To measure anxiety the State-Trait Anxiety Inventory scale (STAI) (Spielberger, Gorsuch and Lushene, 1970) is used here. Spielberger developed the STAI (Spielberger et al, 1970), as a separate self report scales having 20 items for measuring two distinct anxiety concepts : (1) State anxiety (A- State) and Trait anxiety (A- Trait). According to Spielberger, Gorsuch and Lushene (1970) State anxiety (A-state) is regarded as temporary feeling of emotional state of the organism. "It is characterized by subjective, consciously perceived feelings of tension and apprehension and heightened automatic nervous system activity" (Spielberger et al, 1970, p-3). On the other hand, Trait anxiety (A-Trait) is defined as the acquired behavioral disposition which refers to relatively stable individual differences in anxiety proneness" (Spielberger et al, 1970, p-3). The State anxiety (A- State) is a 20 item inventory scale and each of the item is rated from 1 (not at all) and to 4 (very much so) point scale. Here 10 items are non-reversed and 10 items are in reversed score. In Trait anxiety (A- Trait) 13 items are non-reversed and 7 items are in reversed score. Both State anxiety and Trait anxiety are constructed in such a way that higher scores indicate high anxiety and lower scores indicate low anxiety in a person. The reverse items are demonstrating the calm state of behavior.

The State and Trait anxiety has been translated into several languages properties. Some investigators have suggested that the two factor solution produces better fit than the unidimensional solution (Spielberger, 1983), But some

researchers have inconsistent opinions about whether reverse scored items would be included or excluded in this questionnaire. Others insist that reverse-scored items should be excluded because that they might cause poor reliability and validity of scale (Pilotte & Gable, 1990; Schriesheim et al 1993). However, we shall discuss here both non-reversed and reversed items of State Anxiety and Trait anxiety.

But the objective of the present study is to investigate additional properties such as factorial analysis of the State anxiety and Trait anxiety and in addition to State anxiety and Trait anxiety scores are strongly correlated with the Eating attitude scale -26. The factorial structure would be examined by using exploratory factor analysis (EFA) and method effects would be assessed by means of confirmatory factor analysis (CFA).

II. HYPOTHESES

The Hypotheses of the current investigation are :

- (1) Diet habit will positively influence State anxiety (reverse) of adolescent boys and girls.
- (2) Diet habit will negatively influence State anxiety (non reverse) of adolescent boys and girls.
- (3) Diet habit will positively influence Trait anxiety (reverse) of adolescent boys and girls.
- (4) Diet habit will negatively influence Trait anxiety (non reverse) of adolescent boys and girls.
- (5) To find out a casual relationship between State anxiety, Trait anxiety and Eating attitudes.

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III. METHODOLOGY

The sample of the present study of 100 adolescent boys and 100 adolescent girls of 19-20years randomly selected from different departments of first year students of Rabindra Bharati University belonging to middle class family.

IV. SELECTED TOOLS

- (1) A general information schedule was developed consisting of sex, age, monthly income of father.
- (2) The State-Trait Anxiety Inventory (Spielberger, Gorsuch and Lushene (1983). – The State-Trait Anxiety Inventory (STAI) was devised by the most widely - used anxiety measure. The STAI is comprised of separate self-report scales having 20 items for measuring two distinct anxiety concepts : State anxiety (A-State) and Trait anxiety (A-Trait). It is conceptualized as a research instrument for the study of anxiety in adults. It is designed to differentiate between the temporary condition of “state anxiety” (A-State) and the more general and long standing quality of “trait anxiety” (A-Trait) in adults. The State Anxiety is a 20 items inventory scale. Each of the items are rated from 1 (Not at all) to 4 (very much so) point scale. Here 10 items are non-reversed score and 10 items are reversed score. In Trait Anxiety 13 items are non-reversed and 7 items are reversed. Here higher scores indicate greater anxiety and lower scores indicate low anxiety in a person for non-reversed score and the opposite has been taken for reversed score.
- (3) The Eating Attitudes Scale-26 (EAT-26) is probably the most widely used standardized measure of symptoms and concerns characteristic of eating disorders (Garner & Garfinkel, 1979, Garner, Olmsted, Bohr & Garfinkel, 1982). This 26 - item questionnaire measures the frequency of the individuals behavior or attitudes about eating disorders. Items are responded to on a 6- point Likert scale ranging from Always to Never. The EAT-26 items form three subscales : 1) Dieting 2) Bulimia and Food Preoccupation and 3) Oral Control. The EAT- 26 item version (Garner et al, 1979) is highly reliable and valid. According to this methodology, individuals who score 20 or more on the test should be interviewed by a qualified professionals to determine if they meet the diagnostic criteria for an eating disorder. If you have a low score on the EAT-26 (below 20), you still could have a serious eating problem. The EAT- 26 has been particularly useful tools to assess “eating disorder risk” in high school and college.

V. DESCRIPTION OF ITEMS

Variable Names	Items	Items
State Reverse	I feel calm	I feel self-confident
	I feel secure	I am relaxed
	I feel at ease	I feel content
	I feel rested	I feel joyful
	I feel comfortable	I feel pleasant

State Non-Reverse	Items	Items
	I am tense	I feel nervous
	I am regretful	I am jittery
	I feel upset	I feel “high strung”
	I am presently worrying over possible misfortunes	I am worried
	I feel anxious	I feel over excited and “rattled”

Variables names	Items	Items
Trait Reverse	I feel pleasant	I feel secure
	I feel rested	I am content
	I am “calm, cool and collected”	I am a steady person
	I am happy	
Trait Non- Reverse		
	I tire quickly	I lack self-confidence.
	I feel like crying	I try to avoid facing crisis or difficulty.
	I wish I could be as happy as others seem to be	I feel blue.
	I am losing out on things because I can not make up my mind soon enough	Some unimportant thought runs through my mind and bothers me
	I feel that difficulties are piling up so that I cannot overcome them	I take disappointments so keenly that I can not put them out of mind
	I worry too much over something that really does not matter.	I get in a state of tension or turmoil as I think over my recent concern
	I am inclined to take things hard.	

Variables	Items	Items
Eating Attitudes Test (Dieting)-13	I am terrified about being overweight.	Avoid foods with sugar in them.
	Aware of the calorie content of foods that I eat.	Eat diet foods.
	Particularly avoid food with a high carbohydrate content (i.e. bread, rice, potatoes, etc).	Feel uncomfortable after eating sweets.
	Feel extremely guilty after eating.	Engage in dieting behavior.
	Am preoccupied with desire to be thinner.	Like my stomach to be empty.
	Think about burning up calories when I exercise.	Have the impulse to vomit after meals.
Eating Attitudes Test (Bulimia and food) - 6	Am preoccupied with the thought of having fat on my body.	
	Find myself preoccupied with food.	Feel that food controls my life.
	Have gone on eating binges where I feel that I may not be able to stop.	Feel uncomfortable after eating sweets.
Eating Attitudes Test (Oral Control) - 7	Vomit after I have eaten.	Enjoy trying new rich foods.
	Avoid eating when I am hungry.	Take longer than others to eat my meals.
	Cut my food into small pieces.	Display self-control around food.
	Feel that others would prefer if I ate more.	Feel that others pressure me to eat.
	Other people think that I am too thin.	

VI. RESULTS AND INTERPRETATIONS

We employ the multivariate confirmatory factor analysis to examine the first hypothesis of this study. In table -1 results are summarised.

Table: 1. The Following table shows Path coefficients and standardized estimates (reverse).

Variables (State- Reverse)	Estimate	P
State1	.584	***
State2	.411	***
State5	.318	***
State8	.413	***
State10	.625	***
State11	.392	***
State15	.473	***
State16	.403	***
State19	.481	***
State20	.559	***
State5	.079	.334

Here all these scores are in reversed order of latent construct of State anxiety. The model is recursive with 200 samples for State reverse and 10 observed indigenous variables are taken.

The model is 33 distinct parameters and degrees of freedom is 44. The minimum was achieved by analyzing the moment structure with Chi-square value is 92.166. State-5 is the composite score of diet. All paths are significant for state reverse except State-5. All factors loading are nearly .5. All the factor loadings are significant in Table-1. From the path value of State anxiety (reverse) to State 5 (composite score of eating attitude) amounted to 0.79 (P value .334) and also lends us to conclude that for the given focus group. And there is no significant relationship between the emotion and eating attitude.

The second hypothesis is that diet will negatively influence State anxiety (non reverse) for adolescent boys and girls.

Table-2 : This table indicates overall good fit model.

CMIN	2.095
CFI	.828
RMSEA	0.074
MFCVI	.816

Table-2 demonstrates the goodness of fit model with CMIN-2.095, RMSEA .074 and CFI is .828. From the above table it can be seen that chi- square to degrees of freedom statistics is 2.095 and it is below 3. So it points out to an overall good fit model. Comparative Fit Index (CFI) is informative fit statistics and value of this statistics is .828 which is tending toward .9 and RMSEA (.074) shows moderate fit of the model. The value of MECVI is .816 below saturated as well as independence model. It proves good fit model.

Table : 3. The Following table shows Path coefficients and standardized estimates(Non-reverse).

Variables (State-non reverse)	Estimate	P
State3	.547	***
State4	.513	***
State6	.578	***
State7	.515	***
State9	.351	***
State12	.527	***
State13	.585	***
State14	.495	***
State17	.469	***
State18	.413	***
State5	.201	***

In our study we have used the maximum likelihood method for estimating the parameters and path co-efficient indicate the relationship between different constructs. It is found that diet habit negatively influences state anxiety of adolescent boys and girls with the value of path co-efficient as .201 (p value+ .000). The Hypothesis H2 cannot be rejected at conventional level of significance.

Table-4 : This table indicates overall good fit model.

CMIN	1.929
CFI	.875
RMSEA	0.068
MFCVI	.662

From the above table it can be seen that chi- square to degrees of freedom statistics is 1.929 and it is below 2. So it points out to an overall good fit model. Comparative Fit Index (CFI) is informative fit statistics and value of this statistics is .875 which is tending toward .9 and RMSEA (.068) shows moderate fit of the model. The value of MECVI is .662 below saturated as well as independence model. It proves good fit model.

Table- 5 : The Following table shows Path coefficients and standardized estimates.

Variables (Trait-non reverse)	Estimate	P
Trait2	.414	
Trait3	.526	***
Trait4	.296	***
Trait5	.445	***
Trait8	.397	***
Trait9	.279	***
Trait11	.369	***
Trait12	.486	***
Trait14	.207	***
Trait15	.059	***
State5	.152	***
Trait17	.540	***
Trait18	.602	***
Trait20	.496	***

In our study we have used the maximum likelihood method for estimating the parameters and path co-efficient indicate the relationship between different constructs. It is found that diet habit positively influences of trait anxiety adolescent boys and girls with the value of path co-efficient as .152 (p value+ .000). Here all the paths are significant . The Hypothesis H3 can not be rejected at conventional level of significance.

Table-6 : This table indicates overall good fit model.

CMIN	1.643
CFI	.825
RMSEA	0.057
MFCVI	.940

From the above table it can be seen that chi- square to degrees of freedom statistics is 1.643 and it is below 2. So it points out to an overall good fit model. Comparative Fit Index (CFI) is informative fit statistics and value of this statistics is .825 which is tending toward .9 and RMSEA (.057) shows moderate fit of the model. The value of MECVI is .940 below saturated as well as independence model. It proves good fit model.

Table- 7 : The Following table shows Path coefficients and standardized estimates (Trait).

Variables (Trait- reverse)	Estimate	P
Trait	.524	***
Trait6	.388	***
Trait7	.246	***
Trait10	.777	***
Trait13	.501	***
Trait16	.366	***
State5	.166	***
Trait19	.034	.680

In our study we have used the maximum likelihood method for estimating the parameters and path co-efficient indicate the relationship between different constructs. It is found that diet influences negatively trait anxiety of adolescent boys and girls with the value of path co-efficient as .166 (p value+ .000). Here all the paths are significant except trait 19. Though trait 19 is not significant but we cannot drop this item because we have taken here standardized measurement scale.

Table-8: This table indicates overall good fit model.

CMIN	2.689
CFI	.765
RMSEA	.092
MFCVI	.523

From the above table it can be seen that chi- square to degrees of freedom statistics is 2.68 and it is below 3. So it points out to an overall good fit model. Comparative Fit Index (CFI) is informative fit statistics and value of this statistics is .765 which is tending toward .8 and RMSEA (.092) shows moderate fit of the model. The value of MECVI is .523 below

saturated as well as independence model. It proves good fit model.

Table - 9 : The Following table shows Path coefficients and standardized estimates.

Variables (Eating attitudes State anxiety, Trait- anxiety)	Estimate	P
D<-> State Anxiety	.044	***
O<-> State Anxiety	-.001	***
Trait Anxiety <->O	-.001	***
O<->F	.024	***
Trait Anxiety<->F	.033	***
F<-> State Anxiety	.019	***
Trait Anxiety <->D	.035	****

In our study we have used the maximum likelihood method for estimating the parameters and path co-efficient through the covariance structure estimation to determine the relationship between State anxiety, Trait anxiety, Eating attitudes (Diet, Food and Bulimia , Oral) We have found that all paths are significant and results are reported in table-9.

Table-10 : This table indicates overall good fit model.

CMIN	1.59
CFI	.596
RMSEA	.051
MFCVI	8.28

From the above table it can be seen that chi- square to degrees of freedom statistics is 1.59, RMSEA is 0.51. It is a good fit model having all satisfactory values which is depicted in Table-10.

VII. CONCLUSION

The current findings make an important contribution about anxiety and eating attitude test in adolescents. Findings confirm that there is a relationship between long term anxiety and eating attitude. Therefore early intervention program for eating disorders will help adolescent boys and girls in future mental and physical health development which leads perfectionism. In this context we may indicate that the relationship between anxiety and eating disorders has also attracted considerable attention (Davey & Chapman 2009, Godart et al 2000). Despite consistent findings suggesting links between emotions such as anxiety and eating disorder attitude (diet) and the precise role of anxiety in the etiology of eating disorders remains a subject of discussion. Additionally, an intervention and prevention program should be implemented among this population and effects should be examined. Today we have seen that young generations are very much fascinated to fast foods or junk foods. This research will also focus eating disordered of young generations.

VIII. REFERENCES

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