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Gender difference in the level of anxiety in relation to personality and family environment among the first year engineering students

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Abstract

Anxiety is an unpleasant emotional state with qualities of apprehension, dread, distress and uneasiness, is directed towards the future and is out of proportion to the threat. At some point or the other we all experience anxiety in response to the expectation of future threat. Moreover, emerging adulthood is the most vulnerable phase of life span to experience higher levels of anxiety than any other phase. The present study is aimed at determining the relationship between anxiety (state and trait), family environment, and personality factors experienced by the emerging adults. The total sample size was 87 (44 males and 43 females), age ranging from 18-25 years and pursuing Engineering Degree course. They were all Bengali speaking hailing from Hindu background, with Nuclear family type, Urban and Suburban residence of middle class economic background of Kolkata metropolitan city. All of them were in a relationship and currently staying with their families. On them State-Trait Anxiety Inventory (Spielberger *et al.*, 1970), NEO Five Factor Inventory (Robert McCrae & Paul Costa, 1992), Family Environment Scale (Bhatia and Chadha, 1993). The present study reveals that there is significant difference between male and female subjects with respect to conflict, acceptance and caring, independence and active recreational orientation as dimensions of family environment; and conscientiousness as a factor of personality. Moreover, there is significant correlation between the levels of anxiety (both state and trait) and different aspects of family environment and personality factors.

Keywords: State Anxiety, State Anxiety, Family Environment, Personality.

1. Introduction

Emerging Adulthood

Emerging adulthood is a phase of lifespan between adolescence and full-fledged adulthood, proposed by Jeffrey Arnett in a 2000 article in the *American Psychologist*. It primarily applies to young adults in developed countries who do not have children, do not live in their own home, or do not have sufficient income to become fully independent in their early to late 20s. Jeffrey Arnett says emerging adulthood is the period between 18 and 25 years of age where adolescents become more independent and explore various life possibilities. Arnett (2000) suggests that there are a few reasons why the term young adulthood is not fit to describe the developmental period of the late teens and early twenties. First, the term "young adulthood" suggests that at this developmental stage, adulthood has already been reached. But Arnett (2000) states that most people in this developmental stage believe they have not yet reached adulthood. Instead, they believe they are slowly progressing into adulthood, and thus the term "emerging adulthood" is much more appropriate.

Anxiety

"Anxiety, it just stops your life." - Amanda Seyfried

The term 'anxiety' is derived from the Latin term "anxius" – "angere" i.e., to press tightly. Other sources delineate the origin of "anxiety" in the Greek root "augh" which means tightness or constriction. Anxiety generally produces confusion in thinking. Freud defined anxiety as "something felt and unpleasant effect of state or condition". In Freudian theory, anxiety is treated as a vague unpleasant emotional state with qualities of apprehension, dread, distress and uneasiness with additional assumption that it acts as a signal that psychic danger would result were an unconscious wish to be realised or acted upto" (Reber & Reber, The Penguin Dictionary of Psychology, 2009).

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Anxiety is not the same as fear, which is a response to a real or perceived immediate threat; whereas anxiety is the expectation of future threat (APA, 2013). It is often accompanied by muscular tension, restlessness, fatigue and problems in concentration. Anxiety can be appropriate, but when experienced regularly the individual may suffer from an anxiety disorder (APA, 2013).

The Interaction Model of Anxiety

The interaction model of anxiety emphasises the complex interplay between the person and situation. Two conceptual distinctions have been of particular importance in developing the interaction model of anxiety- State anxiety (A-State) and Trait anxiety (A-Trait). This concept was introduced by Cattell (1966) and had been elaborated by Spielberger (1970).

- **State Anxiety:** It is defined as a reaction consisting of unpleasant consciously perceived feelings of apprehension and tension with associated activation or arousal of Autonomic Nervous System (ANS).
- **Trait Anxiety:** It refers to relatively stable individual differences in anxiety proneness, that is, to differentiate between people in tendency to perceive stressful situations as dangerous or threatening and to respond to such situations with elevation in intensity of their state anxiety reactions. Trait anxiety may also reflect individual differences in frequency and intensity with which anxiety states have been manifested in part and in probability that State anxiety will be experienced in future. The stronger the anxiety trait, more probable is that the individual will experience more intense elevation in State-anxiety in a threatening situation.

State and Trait anxiety are analogous in certain respect to kinetic and potential energy. State anxiety, like kinetic energy, refers to a palpable reaction or process taking place at a given time and level of intensity. Trait anxiety, like potential energy, refers to individual differences in reactions. Trait anxiety implies differences between people in the disposition to respond to stressful situation with varying amounts of state anxiety. But whether or not people who differ in trait anxiety will show corresponding differences in state anxiety depends on the extent to which each of them perceives a specific situation as psychologically dangerous or threatening and this is greatly influenced by each individual's past experience.

Personality

The literal meaning of personality is derived from the Latin word *persona*, the mask used by actors in the Roman theatre for changing their facial make-up. After putting on the mask, audience expected the person to perform a role in a particular manner. It did not, however, mean that the person enacting the given role necessarily possessed those qualities.

In psychological terms, personality refers to our characteristic ways of responding to individuals and situations. Personality is characterised by the following features:

- i. It has both physical and psychological components.
 - ii. Its expression in terms of behaviour is fairly unique in a given individual.
 - iii. Its main features do not easily change with time.
 - iv. It is dynamic in the sense that some of its features may change due to internal or external situational demands.
- Thus, personality is adaptive to situations.

Family Environment

Family: An anchor during rough waters.

The family in its most common forms is a lifelong commitment between men and women who feed, shelter and nurture their

children until they reach maturity. It is a primary socialization context and is, therefore, considered to be a very important factor influencing child development (Ozcinar, 2006). A family is a primary group which requires people who are intimate and have frequent face-to-face contact with one another, to some extent live together, have norms in common (that is, expectation regarding how members in the group should behave) and share mutually enduring and extensive influences. Thus, family members as members of a primary group have extreme influence upon each other. Families may consist of intact two-parent families with or without children, single-parent families, reconstituted families, blended families, step-families or any other configuration that fits our definition of family.

Objectives of the Study

Following are the objectives of the present study:-

- A. To determine whether there is any significant difference between male and female subjects with respect to
 - i. Their state and trait anxiety.
 - ii. Their different aspects of family environment, namely, cohesion, expressiveness, conflict, acceptance and caring, independence, active recreational orientation, organisation and control.
 - iii. Their different personality factors like neuroticism, extraversion, openness to experience, agreeableness and conscientiousness.
- B. To determine whether there is any significant correlation between state and trait anxiety of the subjects and
 - i. Their different aspects of family environment, namely, cohesion, expressiveness, conflict, acceptance and caring, independence, active recreational orientation, organisation and control.
 - ii. Their different personality factors like neuroticism, extraversion, openness to experience, agreeableness and conscientiousness.

Hypotheses

- A. There is no significant difference between male and female emerging adults with respect to
 - i. Their levels of anxiety
 - a. State anxiety
 - b. Trait anxiety
 - ii. Their different personality factors like
 - a. neuroticism,
 - b. extraversion,
 - c. openness to experience,
 - d. agreeableness
 - e. conscientiousness
 - iii. Their different aspects of family environment, namely,
 - a. cohesion
 - b. expressiveness
 - c. conflict
 - d. acceptance and caring
 - e. independence
 - f. active recreational orientation
 - g. organisation
 - h. control
- B. There is no significant correlation between the level of state and trait anxiety of emerging adults and
 - i. Their different personality factors like
 - a. neuroticism
 - b. extraversion
 - c. openness to experience
 - d. agreeableness
 - e. conscientiousness

- ii. Their different aspects of family environment, namely,
 - a. cohesion
 - b. expressiveness
 - c. conflict
 - d. acceptance and caring
 - e. independence
 - f. active recreational orientation
 - g. organisation
 - h. control

Methods

Operational Definitions

- **Anxiety:** It is a vague, unpleasant emotional state with qualities of apprehension, dread, distress and uneasiness. It may also be defined as a secondary drive that functions to motivate avoidance responding.
- **State Anxiety:** It is characterised by a state of heightened emotions that develop in response to a fear or danger of a particular situation.
- **Trait Anxiety:** It is the anxiety owing to personality characteristics of an individual. Trait anxiety refers to the stable tendency of an individual to attend to, experience and report negative emotions such as fears, worries, and anxiety across many situations.
- **Personality:** Personality has to do with individual differences among people in behavior patterns, cognition and emotion. Allport (1937) defined “Personality is the dynamic organization within the individual of those psychophysical systems that determine his unique adjustments to his environment.”
- **Family environment:** It is the state within the family that is influenced by a number of factors like, the nature of family constellation, number of children in the family, marital relationships, maternal employment, socio-economic and religious background.

Sample

The sample of the present study comprised of 87 subjects - males (N=44) and females (N=43). They were all students pursuing the engineering degree course. The subjects belonged to the age range of 18-25 years. They were all Bengali speaking hailing from the religious background of Hinduism. They belonged from nuclear families of urban and suburban settings of middle socioeconomic status of Kolkata metropolitan. All of them are in a relationship and are

currently staying with their families.

Inclusion and Exclusion Criteria

The subjects were selected on the basis of the following criteria:-

Inclusion Criteria

1. Age range: 18-25 years
2. Education: Pursuing the degree course of B.Tech and M.Tech
3. Religion: Hinduism
4. Mother Tongue: Bengali
5. Type of Family: Nuclear
6. Socioeconomic Status: Middle class
7. Relationship Status: In a relationship
8. Staying: With family
9. Subjects who were responsive to the purpose of the study

Exclusion Criteria

1. Subjects who were physically handicapped
2. Subjects currently suffering with a psychiatric illness as reported
3. Subjects currently suffering with a physical illness as reported.

Sampling Procedure

For the current study, purposive sampling has been used.

Tools Used

1. An Information Schedule
2. State-Trait Anxiety Inventory (Spielberger *et al.*, 1970)
3. NEO Five-Factor Inventory (Robert McCrae & Paul Costa, 1992)
4. Family Environment Scale (Bhatia and Chadha, 1993)^[2]

Statistical Analysis

- Mean
- Standard Deviation
- Correlation
- t- test

Results

Table 1: Showing Mean, Standard Deviation and t-values representing significant difference between male and female subjects on selected variables

Variables	Mean		Standard Deviation		t-value
	Male(N=44)	Female(N=43)	Male	Female	
Anxiety					
State-Anxiety	38.07	40.79	11.01	10.96	1.156
Trait-Anxiety	42.95	41.26	10.17	9.23	0.815
Factors of Personality					
Neuroticism	22.52	23.05	8.00	6.87	0.327
Extraversion	27.61	29.58	5.62	5.72	1.620
Openness to experience	26.48	27.37	5.54	4.91	0.796
Agreeableness	27.16	26.21	4.71	4.05	1.007
Conscientiousness	33.98	31.37	5.79	6.46	1.982*
Family Environment					
Cohesion	54.00	53.00	7.78	8.32	0.564
Expressiveness	33.77	33.49	4.50	5.54	0.263
Conflict	46.45	43.47	6.82	7.30	1.974*
Acceptance and Caring	48.18	45.21	7.05	6.76	2.006*
Independence	34.64	32.14	4.38	4.47	2.610**
Active Recreational Orientation	32.23	30.42	4.54	4.64	1.838*
Organisation	8.30	8.28	1.47	1.53	0.051
Control	16.14	15.60	1.80	2.74	1.071

*p<0.05; **p<0.01

Note: In the dimension of Conflict, greater the score less is the conflict and vice versa.

Table 1 shows the following results:

- There is significant difference between male and female subjects with respect to conscientiousness as a factor of personality. Thus, the null hypothesis A ii.e was rejected.
- There is significant difference between male and female subjects with respect to conflict, acceptance and caring, independence and active recreational orientation as dimensions of family environment. Thus, the null hypotheses A iii.c - f were rejected.

Table 2: Showing correlation statistics between State Anxiety and selected variables

Variables	Correlation Coefficient
Factors of Personality	
State Anxiety	
Neuroticism	0.504**
Extraversion	-0.171
Openness to experience	-0.067
Agreeableness	-0.298**
Conscientiousness	-0.346**
Family Environment	
State Anxiety	
Cohesion	-0.202
Expressiveness	-0.399**
Conflict	-0.356**
Acceptance and Caring	-0.261*
Independence	-0.291**
Active Recreational Orientation	-0.340**
Organisation	-0.275*
Control	-0.341**

*p<0.05; **p<0.01

Note: In the dimension of Conflict, (-) sign of correlation coefficient indicates the higher the conflict the more is the State Anxiety.

Table 2 shows the following results:

- There is significant positive correlation between state anxiety of the subjects and neuroticism. Thus, the null hypothesis B.i.a is rejected.
- There are significant negative correlations between state anxiety of the subjects and agreeableness and conscientiousness. Thus, the null hypothesis B.i.d and B.i.e are rejected.
- There are significant negative correlations between state anxiety of subjects and expressiveness, conflict, acceptance and caring, independence, active-recreational orientation, organisation and control. Thus, the null hypotheses B.ii.b – h are rejected.

Table 3: Showing correlation statistics between Trait Anxiety and selected variables

Variables	Correlation Coefficient
Factors of Personality	
Trait anxiety	
Neuroticism	0.784**
Extraversion	-0.300**
Openness to experience	0.012
Agreeableness	-0.466**
Conscientiousness	-0.373**
Family Environment	
Trait anxiety	
Cohesion	-0.320**
Expressiveness	-0.345**
Conflict	-0.407**
Acceptance and Caring	-0.301**
Independence	-0.307**
Active Recreational Orientation	-0.333**
Organisation	-0.401**
Control	-0.123

*p<0.05; **p<0.01

Note: In the dimension of Conflict, (-) sign of correlation coefficient indicates the higher the conflict the more is the Trait Anxiety.

Table 3 shows the following results:

- There is significant positive correlation between trait anxiety of the subjects and neuroticism. Thus the null hypothesis B.i.a is rejected.
- There are significant negative correlations between trait anxiety of the subjects and extraversion, agreeableness and conscientiousness. Thus, the null hypotheses B.i.b, B.i.d and B.i.e are rejected.
- There are significant negative correlations between the trait anxiety of the subjects and cohesion, expressiveness, conflict, acceptance and caring, independence, active recreational orientation and organisation. Thus, the null hypotheses B.ii.a – g are rejected.

Discussion

The findings of the present study (Table 1) revealed that there is significant difference in males and females in conscientiousness as a personality factor. Conscientiousness is a personality disposition that determines the degree to which one is careful, precise, thoughtful and responsible in one’s action. The individuals with high conscientiousness are generally cautious, dependable, organised and responsible. The low scorers tend to be disorderly and not dependable (Robert McCrae & Paul Costa, 1992). According to the findings of the present study, the males scored significantly higher than females on this personality factor, indicating that the male emerging adult individuals are more careful, precise, thoughtful, and responsible in their actions than that of female emerging adults.

Previous studies on personality factors revealed women scored higher than men in neuroticism and agreeableness (Chapman *et al.*, 2007) [3]. Males were found to be more assertive and had slightly higher self-esteem than females. Females were higher than males in extraversion, anxiety, trust, and, especially, tender-mindedness (Alan, 1994) [1].

The findings of the present study (Table 1) revealed that there is significant difference between male and female subjects with respect to conflict, acceptance and caring, independence and active recreational orientation as dimensions of family environment. In the context of family environment, conflict refers to the amount of openly expressed aggression and conflict among family members (Bhatia and Chadha, 1993) [2]. In the present study, females perceived their family environment significantly more conflictual than males. On the other hand, males perceived their family environment significantly more accepting and caring, providing independence and engaging in active-recreational orientation than females. In the context of family environment, acceptance and caring refers to the extent to which the members are unconditionally accepted and the degree to which care is expressed in the family; independence is the extent to which family members are assertive and independently make their own decisions; and active-recreational orientation is the extent of active participation in social and recreational activities by the family members (Bhatia and Chadha, 1993) [2]. Previous studies showed cohesion, conflict, control, intellectual – cultural orientation and independence in the family environment influenced home adjustment. Boys and girls differed in perception of the home environment (Mohanraj & Latha, 2005) [11]. Another study revealed that feelings of loneliness were related to perceived levels of inter-parental conflict for males and females and decreased family cohesion

for females (Johnson *et al.*, 2001) ^[10].

From Table 2 it may be observed that there is significant correlation between state anxiety of the emerging adults and neuroticism, agreeableness and conscientiousness. Neuroticism is a broad personality disposition that characterises the degree to which one is chronically emotionally unstable and prone to anxiety and psychosocial distress. Neurotic people tend to be nervous, high-strung, tense and worrying. Whereas emotionally stable people tend to be calm and contented (Robert McCrae & Paul Costa, 1992). In the present study, it may be observed that neuroticism is positively correlated with state anxiety indicating that the more the degree of neuroticism, the more is the level of state anxiety in emerging adults. Agreeableness is a broad personality disposition that influences how an individual values cooperation, harmony and consideration for others. Agreeable people are friendly, trustworthy, cooperative and warm. Individual low on this dimension is cold, quarrelsome and unkind (Robert McCrae & Paul Costa, 1992). Conscientiousness is a personality disposition that determines the degree to which one is careful, precise, thoughtful and responsible in one's action. They are generally cautious, dependable, organised and responsible. The low scorers tend to be disorderly and not dependable (Robert McCrae & Paul Costa, 1992). In the present study, it may be observed that agreeableness and conscientiousness are negatively correlated to state anxiety indicating that the more the degree of agreeableness and conscientiousness, the less is the level of state anxiety in the emerging adults.

From Table 3 it may be observed that there is significant correlation between trait anxiety and neuroticism, extraversion, agreeableness and conscientiousness. It may be observed that neuroticism is positively correlated with trait anxiety indicating that the more the degree of neuroticism, the more is the level of trait anxiety in emerging adults. It is a personality disposition which refers to one's tendency to direct the energies outwards, to be concerned with and derive gratification from the physical and social environment. Extraverts tend to be energetic, enthusiastic, dominant, sociable, and talkative, on the other hand introverts tend to be shy, retiring, submissive and quiet (Robert McCrae & Paul Costa, 1992). In the present study, extraversion, agreeableness and conscientiousness are negatively correlated to state anxiety indicating that the more the degree of extraversion, agreeableness and conscientiousness, the less is the level of state anxiety in emerging adults.

The previous studies showed role ambiguity and subjective work load were positively associated with anxiety. The relationship between work load and anxiety was greatest for Type-A persons (Kaplan and Jones, 1975). Individuals diagnosed with anxiety disorders were high on neuroticism and low on conscientiousness (Roman, *et al.*, 2010) ^[12]. Agreeableness and openness were largely unrelated to anxiety (Roman, *et al.*, 2010) ^[12]. Social Anxiety correlated positively with neuroticism, negatively with extraversion, and had weaker relationships with agreeableness, openness, and trust (Kaplan *et al.*, 2015) ^[9]. Personality dysfunctions are positively correlated with anxiety (Frederick *et al.*, 2000) ^[7]. Thus, the findings of the present study comply with the previous works done by various researchers.

From Table 2 it may be observed that there is significant correlation of state anxiety with expressiveness, conflict, acceptance and caring, independence, active recreational orientation, organisation and control as the different aspects of family environment. In the context of family environment,

expressiveness is the extent to which family members are encouraged to act openly and express their feelings and thoughts directly; conflict is the amount of openly expressed aggression and conflict among family members; acceptance and caring is the extent to which the members are unconditionally accepted and the degree to which care is expressed in the family; independence is the extent to which family members are assertive and independently make their own decisions; active recreational orientation is the extent of active participation in social and recreational activities by the family members; organisation is the degree of importance of clear organisation structure in planning family activities and responsibilities; and control is the degree of limit setting within a family (Bhatia & Chadha, 1993) ^[2]. In the present study, it may be observed that the above dimensions are negatively correlated with state anxiety indicating that the more the degree of these dimensions the less is the state anxiety of the emerging adults; except the dimension of conflict, in which the negative correlation indicates that the more the conflict in the family the more is the state anxiety of the emerging adults.

From Table 3 it may be observed that there is significant correlation of trait anxiety with cohesion, expressiveness, conflict, acceptance and caring, independence, active recreational orientation and organisation as the different aspects of family environment. Cohesion, in the context of family environment, is the degree of commitment, help, and support family members provide for each other (Bhatia & Chadha, 1993) ^[2]. In the present study, it may be observed that the above mentioned dimensions are negatively correlated with trait anxiety indicating that the more the degree of these dimensions the less is the trait anxiety of the subjects; except the dimension of conflict, in which the negative correlation indicates that the more the conflict in the family the more is the trait anxiety in the emerging adults.

Adolescents reporting higher levels of social anxiety perceived their parents as being more socially isolating, overly concerned about others' opinions, ashamed of their shyness and poor performance, and less socially active than did youth reporting lower levels of social anxiety (Jeffrey *et al.*, 1999). Children categorised as behaviourally inhibited were significantly more likely to meet criteria for a range of anxiety diagnoses (Hudson *et al.*, 2011) ^[8]. Family functioning significantly predicted anxiety symptoms (Chapman, *et al.*, 2009) ^[4]. Early experience with diminished control may foster a cognitive style characterized by an increased probability of interpreting or processing subsequent events as out of one's control, which may represent a psychological vulnerability for anxiety (Chorpita *et al.*, 1998) ^[5]. *Late adolescents' feelings of social anxiety and social avoidance were related to their feelings of loneliness* (Johnson *et al.*, 2001) ^[10]. Levels of anxiety were negatively correlated with the three dimensions of family environment (communication, encouragement of personal growth, and system maintenance) and positively correlated with discrepancy between 'actual' and 'desirable' environment (Popko *et al.*, 2002) ^[13]. Direct communication of information within the family was associated with lower levels of anxiety (Edwards & Clarke, 2004). Academic performance was significantly related to independence and conflict domains of family environment (Moharaj & Latha, 2005) ^[11].

Conclusion

The present study aimed at determining the relationship between anxiety (both state and trait) with the family environment and personality factors experienced by the

students pursuing engineering degree course. The total sample size was 87 (with 44 males and 43 females). Their age ranged from 18-25 years. Five questionnaires were administered on them, namely, State-Trait Anxiety Inventory, Family Environment Scale and NEO Five Factor Inventory.

It is evident from the present study that there is significant correlation between the levels of anxiety (both state and trait) and different aspects of family environment and personality factors. Further details of the findings are listed below:-

1. There is significant difference in conscientiousness as a factor of personality between male and female subjects.
2. There is significant difference between male and female emerging adults with respect to conflict, acceptance and caring, independence and active-recreational orientation as the different dimensions of family environment.
3. It was found that expressiveness, conflict, acceptance and caring, independence, active-recreational orientation, organisation and control were significantly negatively correlated to state anxiety (however, in the dimension of conflict negative correlation indicates the more the conflict, the more is the state anxiety); cohesion, expressiveness, conflict, acceptance and caring, independence, active-recreational orientation and organisation were significantly negatively correlated to trait anxiety (however, in the dimension of conflict negative correlation indicates the more the conflict, the more is the trait anxiety).
4. There is significant positive correlation between neuroticism and anxiety (state and trait); significant negative correlations between agreeableness and conscientiousness and state anxiety; and significant negative correlation between extraversion, agreeableness and conscientiousness and trait anxiety.

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