A Pilot Study of Affect Amongst the Cadets of Air Force Academy

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Abstract

Background: Affect refers to full blown emotions, sustained moods, and dispositions involving mood and emotions. Affect plays a vital role in our psychological lives. People give the impression to be in some or the other mood most of the time. Our perception and evaluation of life events is coloured by affect. Affect mediates the reaction people have to various life stressors and hence also has a bearing on the different coping styles and capacity to handle stress. Training is a phase characterised by challenges ranging from physiological to psychosocial domains.

Methods: In a preliminary attempt to examine the affective profile of Flight Cadets at Air Force Academy (AFA) and to study the possible gender differences, this pilot study was taken up. The study had two parts; 57 cadets (17 females and 40 males) participated in the quantitative part of the study and 11 Instructors took part in the qualitative study. Objective measure of affect was done using Neuroticism and Extraversion scale of NEO-PI R, State-Trait Anxiety Inventory and Positive Affect and Negative Affect Scale. For the qualitative estimation, instructors were interviewed using a semi-structured interview schedule.

Results & Discussion: Results revealed that only 7% (4 out of 57) of cadets were high on neuroticism and low on extraversion. Female cadets were higher than male cadets both in state anxiety and trait anxiety. There were significant differences between males and females on the dimension of extraversion, neuroticism, state anxiety and trait anxiety. Neuroticism significantly predicted both trait anxiety and state anxiety among cadets. Instructors rated emotional stability, assertiveness, warmth and empathy as the most important attributes of a healthy cadet. Implications of affective states during training stage are discussed.

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Introduction

Affect is used as a convenient super ordinate term which refers to full blown emotions, sustained moods, information about preferences, and dispositions involving mood and emotions [1]. Function of affect is to organize a limited number of basic responses quickly, adaptively and in an organized manner and link these responses to situational environments [2]. Affect denotes diffused positive and negative feelings that are less intense and more obscure than emotions and moods [3]. Affect plays a vital role in our psychological lives. People give the impression to be in some or the other mood for most of the time. Moreover, the psychological effects that affect produces are far-reaching and broad-ranging. Therefore, affect is important in the attempt to explain and appraise the ways in which people feel, think and behave. The positive and negative affective states form the parts of the These concepts are fundamental to the understanding of the enduring individual differences. These dispositional traits define a person's tendency towards reacting to events in a patterned and predictable manner. macro level of the affect states.

Positive Affect: It is the disposition to experience positive emotional states and the characteristics related to positive affect including confidence, optimism, and self-efficacy. Positive Effectivity is the central core of Extraversion.

Negative Affect: It is the predisposition to experience aversive emotional states such as anxiety, depression, anger, disgust, and contempt etc. The concept of Negative Affect (NA) is important because it is related to psychological distress and reports of somatic complaints. Neuroticism is the hallmark of negative affect [4,5].

Affect carries the capacity to colour the way people remember the past or view the present and future. It plays an important role in how information about the world is processed and represented. It underlies the cognitive representation of most social experiences [6]. Affect is known to affect interpersonal relationships. Affect is a functional and even critical component of adaptive social

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thinking [7,8]. When new people are encountered while under the effect of negative affect, they are evaluated negatively with more negative characteristics [9,10]. Affect is an important attribute to study since it can colour perception and experience.

Gender has been defined as consisting of the socio-cultural facets of defining people's identity in relation to sex [11]. There are numerous studies that have found that gender differences in affect exist across cultures. Across 26 cultures women reported themselves to be higher in neuroticism (Negative affect) and men were higher in assertiveness (a component of positive affect) [12]. Across cultures women have higher anxiety levels than men irrespective of socio-demographic or clinical variable interaction [13]. This pattern is consistent in the fact that clinical diagnoses of depression and anxiety are considerably more common in women than men [14]. Affect has not been studied in cadets and thus warrants attention as training is a phase marked with stress and pressure to conform and perform. Affective profile of an individual plays a vital role in adjustment and healthy coping strategies. This current pilot study was undertaken with an objective to (a) identify the general level of affect among cadets and (b) examine the gender differences in affect, if any, among IAF cadets.

Material and Methods

For the quantitative part of assessment of affect, a group of 68 cadets (19 females and 49 males) participated in this study. Their medical category was "fully fit". Responses from 11 Cadets were incomplete; hence, they were rejected from the present study. There were a total of 57 responses from cadets (17 females and 40 males) available for analysis. Their age ranged from 20-25 years with a mean of 22.02. For the qualitative part, 11 instructors were interviewed using semi-structured interview schedule. The following psychological scales and questionnaires were used to study affect among cadets:

NEO Personality Inventory Revised (NEO-PI-R) [15]
The NEO-PI-R measures the five-factor model of personality. The five broad factors of Neuroticism, Extraversion, Openness, Agreeableness and Conscientiousness are measured by NEO-PI-R along with the six facets under each of them allowing a comprehensive assessment of adult personality. For this study, two domains of Neuroticism and Extraversion were used. The internal consistencies for the individual facet scales of the inventory range from 0.56 to 0.81, and for the domain scales the coefficient range from 0.86 to 0.92.

The NEO-PI-R consists of 240 items for the measurement of the 30 facets and 5 domains, but for the purpose of the present study, only 120 items were taken. Since positive affectivity is the central core of Extraversion and Neuroticism is the hallmark of negative affectivity, complete domain of neuroticism and extraversion with all six facets each was taken.

State-Trait Anxiety Inventory (STAI; 1983) [16]
It is a self-report measure to find out the presence and severity of current symptoms of anxiety and a generalized propensity to be anxious. There are 2 subscales within this measure. First, the State Anxiety Scale (S-Anxiety) evaluates the current state of anxiety, asking how respondents feel "right now," using items that measure subjective feelings of apprehension, tension, nervousness, worry, and activation/ arousal of the autonomic nervous system. The Trait Anxiety Scale (T-Anxiety) evaluates relatively stable aspects of "anxiety proneness," including general states of calmness, confidence, and security. The STAI has 40 items, 20 items allocated to each of the S-Anxiety and T-Anxiety sub- scales.

Watson's Positive Affect and Negative Affect Scale [17]
Watson's Positive Affect and Negative Affect Scale (PANAS) has twenty words that describe different feelings and emotions. The subjects were requested to indicate to what extent they felt in a particular way during the past three months on a five point Likert scale from "not at all", "a little", "moderately", "quite a bit" and "extremely". The positive affect (PA) score and the negative affect (NA) score were tabulated separately for each subject by summating the responses on positive words and summating the responses given on the negative words respectively on PANAS. The maximum PA score a subject could score is 50 and minimum is 10, similarly a maximum NA score a subject could obtain is 50 and minimum is 10.

Semi-Structured Interview Schedule for Instructors
A semi-structured interview schedule was prepared to gather information regarding positive and negative affect from instructors of AFA. It had five questions related to affective qualities and tendencies. The concept of affect and its importance was explained to the instructors. Once they were comfortable with the subject of affect, instructors were informed that there was no right or wrong response that was being sought rather it was their own genuine views that were more important. They were asked to give a free reign to their thought process and were allowed to use any adjective that came to their mind in order to explain someone's personality.

Results and Discussion

Table 1 gives an overview of the descriptive details of the sample consisting of 57 cadets of AFA.

Table 1. Descriptive data of the cadets

Variable	Min	Max	Mean	SD
Age	20	25	22.02	1.35
Positive Affect (PA)	28	50	41.18	4.52
Negative Affect (NA)	10	27	16.18	4.16
Extraversion (E)	79	162	123.02	15.82
Neuroticism (N)	26	131	69.93	18.38
State Anxiety (SA)	4	95	36.98	23.44
Trait Anxiety (TA)	3	100	44.28	24.77

Mean score of the group on positive affect (41.18) was higher than the average norms whereas on negative affect (16.18) it was within the average age norms which implied that on an average cadets were high on positive affect. The same trend was seen for extraversion and neuroticism wherein a mean score of 123.02 fell in the area of high scores whereas a mean score of 69.93 on neuroticism fell in the average norms. Scores on both state anxiety and trait anxiety were below significant level. A healthy personality requires maximization of positive affect and minimization of negative affect. Overall this group fell in psychologically healthy category.

Further analysis was carried out on individual scores to find out the number of cadets showing deviation from group scores.

Table no. 2 shows that state anxiety and trait anxiety is significantly positively correlated with neuroticism and negative affect whereas only trait anxiety showed significant negative correlation with extraversion. Extraversion was significantly related to positive affect and neuroticism was positively correlated with negative affect. All the variables of positive aspects of overall affect show significant relation with each other and negative affect variables show significant relationship with each other but not with positive affect variables.

Dependent Variable: Extraversion

When compared to other variables trait anxiety and positive affect prove to be better predictors for extraversion though their directions are opposite. It shows that higher the score on trait anxiety the lesser will be the score on extraversion which is hallmark of positive aspects of affect. Trait anxiety score predicts 10.1% variance in the score of extraversion. Positive affect contributes significantly to this variance by adding 6.7% additional variance thus making it 16.8%. (Table- 3)

Table 3. Multiple regression summaries for extraversion

Model	Predictor	Adjt R^2	β	F-Value	Significance
1	TA	0.101	- 0.343	7.371	0.009
2	TA	0.168	- 0.289	6.649	0.003
	PA		0.288		

Dependent Variable : Neuroticism

Trait anxiety comes out to be a significant predictor of neuroticism by accounting for 47.7% variance in the score of neuroticism. Trait anxiety and state anxiety together predict 50.5% variance which is highly significant. Elevated levels of state and trait anxiety will affect the neuroticism score by increasing it. (Table-4)

Table-2 Correlation among study variables

Variables	SA	TA	E	N	PA	NA
SA	1	0.750**	-0.252	0.650**	-0.190	0.332*
TA	0.750**	1	-0.343*	0.698**	-0.187	0.401**
E	-0.252	-0.343*	1	-0.212	-0.342**	-0.049
N	0.650**	0.698**	-0.212	1	-0.260	0.273*
PA	-0.190	-0.187	-0.342**	-0.260	1	-0.283*
NA	0.332*	0.401**	-0.049	0.273*	-0.283*	1

** Correlation was significant at the 0.01 level (2-tailed).

* Correlation was significant at the 0.05 level (2-tailed).

Table 4. Multiple regression summaries for neuroticism

Model	Predictor	Adjt R^2	β	F-Value	Significance
1	TA	0.477	0.698	52.110	0.000
2	TA	0.505	0.481	29.600	0.000
	SA		0.289		

Dependent Variable :
Trait Anxiety

All the dimensions of negative affect are significantly related to trait anxiety. Neuroticism accounts for 47.7% variance in the trait anxiety. This variance goes up to 53.4% with addition of negative affect to it. Neuroticism along with negative affect and extraversion accounts for 57.5% variance in the trait anxiety scores. (Table -5)

Table 5. Multiple regression summaries for trait anxiety

Model	Predictor	Adjt R^2	β	F-Value	Significance
1	N	0.477	0.698	52.110	0.000
2	N	0.534	0.635	30.992	0.000
	NA		0.228		
3	N	0.575	0.591	23.914	0.000
	NA		0.230		
	E		-0.206		

Individuals having high score on neuroticism are susceptible to anxiety. Neuroticism is the core of negative affect. Neuroticism describes the tendency to experience negative emotions and related processes in response to perceived threat and punishment. These include anxiety, depression, anger, and emotional lability. Affect colours perception and influences judgment. Negative affect is synonymous with neuroticism and positive affect is essentially extraversion. Extraversion reflects sociability, assertiveness and positive emotionality, all of which have been linked to sensitivity to rewards [18]. Extraversion and neuroticism represent trait level affect. Traits are the consistent patterns of thoughts, feeling, motives and behaviours that a person exhibits across situations. It implies that both extraversion and neuroticism are relatively stable over life span.

In a study of 207 psychiatric patients, depression, anxiety and neuroticism were assessed using self report measures and strong overlaps were found among the three [19]. Meta analysis of 175 studies published between 1980 to 2007 found neuroticism to be the strongest predictor of mental health and negative affect variables [20]. Results of the present study has shown a high correlation and covariance between study variables wherein negative affectivity, neuroticism and anxiety are positively associated and extraversion and positive affectivity are closely associated. Similarly in a study analysing 28 Generalized Anxiety Disorder (GAD) cases using neuroticism and personality measures, neuroticism was found to be significantly correlated with both GAD and personality [21]. Neuroticism has been investigated very thoroughly in studying association with vulnerability to affective disorders [22,23]. There is a strong evidential support for shared variance and genetic influences among neuroticism, anxiety disorders and depressive disorders [24]. These researches support the findings of the present study which clearly shows that there is high correlation between neuroticism and anxiety. A likely interpretation could be due to these variables sharing some common underlying trait. Large number of studies have shown that clear associations exist between Neuroticism and measures of negative affect and between extraversion and measures of positive affect [25,26,27]. Therefore, the three tools used for this study correlate with affect efficiently.

The data was further analyzed with one way analysis of variance (ANOVA) (Table-7). There were significant difference males and females on Extraversion $F=5.035$, $p<0.05$, Neuroticism $F=5.391$, $p<0.05$, State Anxiety $F=6.583$, $p<0.05$ and Trait Anxiety $F= 6.191$, $p<0.05$. No significant difference was found between males and females on positive affect and negative affect schedule scores.

Table No. 6 & Fig 1 shows that only one male participant scored low on positive affect whereas none of the female candidates scored in that category. Majority of the group has scored very high on positive affect scale. Similarly only two participants, one male and female each, had scored high on negative affect, indicating good affective health of the group.

Table 6. Distribution of scores on PANAS

		Low	Average	High
Positive Affect	Males	1	7	31
	Females	0	8	10
	Total	**1**	**15**	**41**
NegativeAffect	Males	12	26	1
	Females	4	13	1
	Total	**16**	**39**	**2**

Table 7. Results of ANOVA for the sample

		Sum of Squares	df	Mean Square	F	Sig.
PA	Between Groups	59.887	1	59.887	3.032	0.087
	Within Groups	1086.359	55	19.752		
	Total	1146.246	56			
NA	Between Groups	42.365	1	42.365	2.511	0.119
	Within Groups	927.880	55	16.871		
	Total	970.246	56			
E	Between Groups	1175.393	1	1175.393	5.035	0.029
	Within Groups	12839.590	55	233.447		
	Total	14014.982	56			
N	Between Groups	1689.852	1	1689.852	5.391	0.024
	Within Groups	17239.868	55	313.452		
	Total	18929.719	56			
SA	Between Groups	3290.739	1	3290.739	6.583	0.013
	Within Groups	27494.244	55	499.895		
	Total	30784.982	56			
TA	Between Groups	3477.423	1	3477.423	6.191	0.016
	Within Groups	30892.085	55	561.674		
	Total	34369.509	56			

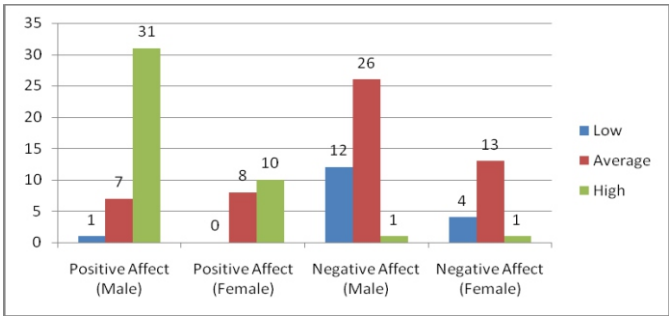

Fig 1. Showing distribution of males and females' scores on PANAS

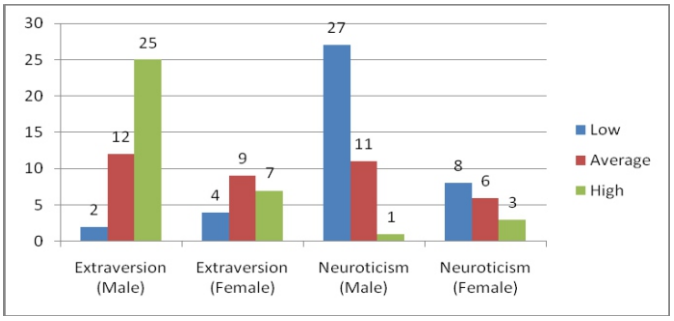

Fig 2. Showing scores of males and females on Anxiety (State & Trait)

Table No. 8 shows the same trend in Extraversion as well as Neuroticism scores. Cadets are high on extraversion and low on neuroticism. The same is depicted in Fig 2 below.

Table 8. Distribution of scores on Extraversion and Neuroticism

		Low	Average	High
Extraversion	Males	2	12	25
	Females	2	9	7
	Total	**4**	**21**	**32**
Neuroticism	Males	27	11	1
	Females	8	6	3
	Total	**35**	**18**	**4**

Table No. 9 and Fig. 3 indicates that more females than males had high state anxiety whereas trait anxiety shows balance in both groups. Data was further analysed for gender differences which is discussed subsequently.

Table 9. Distribution of scores on STAI

		Average	High
State Anxiety	Males	39	1
	Females	12	5
	Total	51	6
Trait Anxiety	Males	36	4
	Females	11	6
	Total	47	10

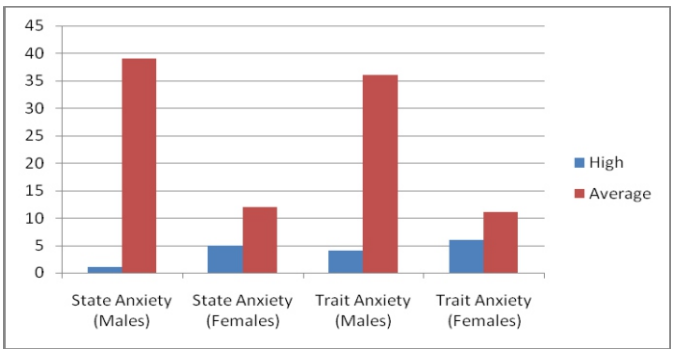

Fig 3. Showing scores of males and females on anxiety (state & trait)

This study shows significant overlapping and significant differences in both the groups. Gender differences in terms of mean differences do not imply that they experience states on opposing ends of spectrum only; on the contrary these differences can exist along with a high degree of overlap between the distributions of men and women [28]. In the present study females have scored significantly higher than males on neuroticism and overall anxiety dimensions. Literature too supports this view as many studies have found the similar findings [29,30]. Males have scored higher on extraversion as compared to females whereas literature also supports the contradiction on this. Some studies have found women to be slightly higher in extraversion [29], whereas others have reported women to be lower on this attribute [30]. Across cultures women have reported higher anxiety levels than males irrespective of socio-demographic or clinical variable intervention [13]. At the same time other theorists suggest that gender norms are shaped by socio-cultural influences such that men and women are expected to serve different roles in society and are therefore socialized to behave differently from one another [31,32].

Qualitative Analysis of Interview with Instructors

A 30 minutes semi-structured interview or questionnaire was conducted with instructors of AFA. During this time, background information was obtained using five broad open ended questions pertaining to affect. A total of 11 instructors were interviewed.

Table 10-A shows the responses of the semi-structured interview for the Positive Affect, conducted with 11 instructors. The results revealed that the 84% of instructors said empathy should be considered as one of the feature as inclusive criteria when selecting officers. 76% officers said that selected candidates should have the attribute of warmth and consideration. 80% officers said assertiveness is very important feature where as 83% officers said emotional stability is a very important feature, which important for a cadet to succeed in his short and long-term endeavours.

Table 10-A Interview Responses for Positive Affect

Inclusion Criterion	% of the responses
Empathy	84%
Warmth	76%
Assertiveness	80%
Emotional Stability	83%

Table 10-B shows the responses of the semi-structured interview for the Negative Affect, conducted with 11 instructors. 84% instructors stated that emotional lability (impulsivity) was an attribute that should be taken very seriously while selecting a candidate. 81% instructors rated anxiety as one of the important negative affect variable affecting performance and 79% of instructors considered self consciousness and 80% instructors opined that emotional vulnerability should be taken very seriously as it is counterproductive for efficiency and performance.

Table10-B Interview Responses for Negative Affect

Exclusion Criterion	% of the responses
Emotional Lability	84%
Anxiety	81%
Self consciousness	79%
Vulnerability	80%

Conclusion

Military training is demanding and challenging, both physically and psychologically. The cadets are required to learn new complex skills, be disciplined and have high level of physical and psychological fitness. Though the existing selection system takes utmost care to profile the candidates for their psychological fitness so that they can withstand the rigors of training phase and become Armed Forces Officers, yet certain aspects of personality may remain hidden and surface later under stressful circumstances. Affective component of personality plays a crucial role in the way events are interpreted and attributions made. Neuroticism, the core of negative affect, is linked to mental health problems and anxiety. It influences the cognitive evaluation of events and memories. It has a profound effect on both psychological health and information processing. Cadets with high scores on neuroticism and trait anxiety need to be counselled accordingly so that this does not interfere in their performance. Gender too plays an important role and the same needs to be kept under consideration while addressing psychological issues. This was a preliminary

study to examine the affective profile of cadets and gender differences, if any. Further longitudinal studies are required to be done with larger sample so that the effect of the study variable can be understood during post-training period as well.

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