CHAPTER V

DISCUSSION OF RESULTS
Psychometric research in the area of motivation measurement has been of great value for understanding individual motivation and group motivation. All the research carried out in this field so far has resulted in the development of questionnaire measures of motivation based on conceptual grounds, and reliable internal consistency procedures have been evolved on factor-analysis of various data collected by various researchers. The Neuroticism Scales of Eysenck Personality Inventory (Eysenck and Eysenck, 1964), Taylor's Manifest Anxiety Scale (Taylor, 1953), Lynn's Achievement Motivation Questionnaire (Lynn, 1969), Factor 'C' of 16 P.F. Test (Cattell, 1970), and Realistic Motivation Questionnaire (Spautz, 1975) have been used to measure different aspects of motivation.

The five Scales and Questionnaires mentioned above were not tried together earlier, though there have been stray studies on cross-cultural populations. The present investigation is distinguished insofar as it takes into consideration all the Scales and Questionnaires simultaneously. Its distinction also lies in its approach from the angles of 'Statistical' analysis. The present study is an attempt to investigate the motivation of the students, both foreign and Indian, studying in Chandigarh. Five major standardized tests were employed to measure the 'pattern of motivation' among various categories of students.

Saville and Blink Horn (1976), Eysenck et al (1977), Lojk et al (1977), Mohan (1979) and Sharma (1981), pointed out some differences among various populations, studied in these researches, with regard to the questionnaire measurements of their personality and motivation, etc.

The results of the present study have already been presented, along with Tables and Graphs, in Chapter IV.

A study of Table (I) reveals that the highest mean score for Indian students on variable $X_2$ is 11.56 while on variable $X_4$ it is 4.25, and on variable $X_6$ it is 5.91. For foreign students the respective scores are 10.92, 3.88 and 5.46. These results thus show that in general Indian students score higher on Extraversion Social desirability and Achievement Motivation than foreign students. On variables $X_3$ and $X_5$ the respective highest mean scores of Indian students are 11.83 and 21.06, while in case of foreign students the highest scores are 17.71 and 21.46 respectively. Thus Indian students in general score lower on Neuroticism and Manifest Anxiety. These results indicate a broad support to the proposed hypothesis regarding these variables.

A comparison of various mean scores of foreign male and female students shows that on variables $X_3$, $X_5$, $X_6$ and $X_7$, foreign girl students score 17.71, 20.88, 5.46 and 10.83 respectively. The corresponding scores of foreign male students are 12.50, 21.46, 5.38 and 10.62 respectively. This
shows that foreign female students score higher on Neuroticism, Achievement Motivation and Realistic Motivation but lower on Anxiety in comparison to foreign male students. The results obtained confirm our hypothesis regarding the variables $X_3$, $X_6$ and $X_8$ but do not support the hypothesis regarding variable $X_5$.

Comparing Indian male and female students, it is found that the mean scores of male students for various groups on variables $X_2$ are 11.27, 11.56, 11.39, 10.51 and for female students these are 9.51, 10.99, 9.76 and 10.75. These results show that Indian male students in general score higher on extraversion than their female counterparts. The highest mean scores of Indian male students on variables $X_2$, $X_5$, $X_6$ respectively are 11.39, 12.60 and 5.65, while those of female students are 11.83, 21.06 and 5.91 respectively. It is, therefore, concluded that Indian male students score lower on Neuroticism, Manifest Anxiety, and Achievement Motivation than female students. The above results broadly support our assumptions. The highest mean score of Indian male students on variable $X_5$ is 11.03 while that of Indian female students is 10.55. Thus Indian males score higher on realistic motivation than their female counterparts.

The mean scores of various groups of Indian science students i.e. University male science group, University female science group, college male science group and college female
science group on variable $X_2$ are 11.56, 9.51, 10.51 and 10.75 respectively, whereas the mean scores of Indian arts students i.e. University male arts group, University female arts group, college male arts group and college female arts group on variable $X_2$ are 11.27, 10.99, 11.39 and 9.76 respectively. It is observed that University male science group and college female science group are higher on Extraversion i.e. variable $X_2$ in comparison to their counterparts in arts groups, whereas, University female science group and college male science group are lower on Extraversion i.e. variable $X_2$ in comparison to their counterparts in arts groups.

The highest mean scores of science groups on variables $X_3$, $X_5$, $X_7$ and $X_8$ are 11.39, 19.92, 15.51 and 10.55 respectively, whereas the corresponding figures of arts groups are 11.83, 21.06, 16.02 and 11.03 respectively. These results show that science students score lower on Neuroticism, Anxiety, N (16 PF) and Realistic Motivation in comparison to arts students. This conclusion is contrary to our hypothesis that science students should be found to be higher on Neuroticism and Realistic Motivation in comparison to arts students.

**Analysis by t-ratios**

In an attempt to understand the motivation of students (both male and female) of various departments of Punjab University and certain colleges affiliated to it, belonging to both science as well as arts groups and of both Indian as
well as foreign origin, t-tests were carried out. These tests reveal another facet, namely that about seventy-five per cent of the t-ratios were found to be statistically insignificant. Out of the significant ones, hardly sixteen per cent were found to belong to the measures of 'motivation'. This trend of results of t-ratios proves two points:

(i) that a large number of students of various groups do not differ significantly from each other on Neuroticism, Anxiety, Achievement Motivation, Neuroticism (16 PF) and Realistic Motivation; and

(ii) that there might be a lot of commonality or similarity of 'motivational pattern' among students on the above-mentioned variables.

Considering t-tests individually, it can be said that the maximum differences are noticeable on Anxiety and Neuroticism (16 PF). However, this finding calls for a further probe into the motivation of students with the help of the method of Analysis of Variance and finally through Cluster Analysis.

ANALYSIS OF VARIANCE

The analysis of variance carried out on the scores obtained on the variables of Extraversion, Neuroticism, Social Desirability, Anxiety, Achievement Motivation, Neuroticism (16 PF) and Realistic Motivation yielded highly significant
F-ratios for Neuroticism, Social Desirability, Anxiety and Neuroticism (16 PF), and non-significant for Achievement Motivation and for Realistic Motivation. These F-ratios indicate in a larger measure lack of difference among the various groups of students with regard to the measures of motivation except in the case of Neuroticism and Anxiety. However, the ten groups of students of Punjab University show a 'motivation pattern' which needs to be studied further with the help of the method of 'Cluster Analysis', so that definite conclusions are drawn.

**Cluster Analysis**

**Intergroup Similarities and Dissimilarities**

The method of clustering of groups has yielded a very interesting pattern on the 'measures of motivation'. Some of the salient findings based on the total number of groups and the total number of variables, stepwise discarding of variables, and analysing the data for recombinations of the groups and different combinations of the variables are as follows:

**Cluster Analysis for Group Combination — All Groups**

1. The Cluster Analysis of all the ten groups and all the eight variables (ref. Result 1, Ch.IV) shows that the motivation of all the ten groups is different since no cluster is formed.

2. For all the ten groups and a combination of variables
$X_1$, $X_3$, $X_5$, $X_6$ and $X_7$ (ref. Result 2. Ch.IV) it was found that the female arts and female science groups of the University form a cluster.

3. For all the ten groups and a combination of variables $X_3$, $X_5$, $X_6$, $X_7$ and $X_8$ (ref. Result 3, Ch.IV) the following pattern of 'clusters' is observed:

(i) University male science group clusters with college male arts group.

(ii) University female science group clusters with college female science group.

(iii) University female arts group clusters with college female science group.

(iv) College female arts group clusters with Foreign male group.

(v) Foreign male group clusters with foreign female group.

4. An analysis of the combination of variables $X_3$, $X_5$, $X_6$ and $X_8$ for all the groups (ref. Result 4, Ch.IV), shows that:

(i) University female science group clusters with University female arts group. (ii) University female arts group clusters with college male arts group. (iii) College female arts group clusters with college female science group.

5. For a combination of variables $X_5$, $X_6$, $X_7$ and $X_8$ (ref.
Result 5, Ch. IV) the analysis reveals the following:

(i) University female science group clusters with college female science group.

(ii) University female arts group clusters with college female science group.

(iii) College female arts group clusters with foreign female and foreign male groups.

(iv) Foreign male group clusters with foreign female group.

6. An analysis of the combination of variables $X_3$, $X_5$, $X_6$, and $X_7$ for all the groups (ref. Result 6, Ch. IV) reveals the following clusters among various groups:

(i) University male science group clusters with college male arts group.

(ii) University female science clusters with college female science group.

(iii) College female arts group clusters with foreign male group.

(iv) Foreign male group clusters with foreign female group.

(v) University male arts group clusters with college male science group.

7. For a combination of variables $X_3$, $X_5$, $X_6$ of all
the groups (ref. Result 7, Ch.IV) the analysis reveals the following:

(i) University male arts group clusters with college male science group.

(ii) University female science group clusters with University female arts group.

(iii) University female science group clusters with college female science group.

(iv) University female science group clusters with college male arts group.

(v) University female arts group clusters with college male arts group.

(vi) College female arts group clusters with foreign male group.

8. An analysis for the combination of variables $X_6$, $X_7$, $X_8$ for all the groups (ref. Result 8, Ch.IV) reveals the following clusters:

(i) University female arts group clusters with foreign male group.
(ii) University female science group clusters with college female science group.

(iii) University female science group clusters with college female arts group.

(iv) College female arts group clusters with foreign male group.

(v) College female arts group cluster with college female science group.

(vi) University male science group clusters with college male science group.

(vii) University female science group clusters with foreign female group.

(viii) College male arts group clusters with college male science group.

9. For all the groups and combination of variables $X_3$, $X_6$ (ref. Result 9, Ch.IV) the analysis reveals clustering of groups as follows:

(i) University female science group clusters with college female science group.

(ii) University female science group clusters with University female arts group.

(iii) University female arts group clusters with college female science group.
(iv) University male science group clusters with college male arts group.

(v) University female science group clusters with college male science group.

(vi) College male science group clusters with college female science group.

10. For the combination of variables $X_3$ and $X_9$ and for all the groups the analysis reveals the following clusterings:

(i) University male science group clusters with University female arts group.

(ii) University female arts group clusters with college female science group.

(iii) University male science group clusters with college female arts group.

(iv) University female science group clusters with college male science group.

Analysis on Indian Arts Groups

A separate study was carried out for inter-comparison of the four Indian arts groups, i.e. University male arts, University female arts, College male arts and college female arts on the five 'measures of motivation'. The following
results emerged:

1. On an analysis of all Indian arts groups, i.e. groups 1,4,5,7, for a combination of variables $X_6, X_7, X_8$ (ref. Result 11, Ch.IV) the following clusters were observed:

   (i) University male arts group clusters with college male arts group.
   (ii) University female arts group clusters with college female arts group.

2. An analysis of all Indian arts groups for a combination of variables $X_3, X_6, X_9$ (ref. Result 12, Ch.IV) reveals the following result:

   (i) University female arts group clusters with college female arts group.

Cluster Analysis for All Science Groups

By following the procedure adopted for analysing the Results 1-12, we have done 'cluster analysis' on all the four science groups, viz. University male science group, University female science group, college male science group and college female science group. The following are the salient findings:

1. An analysis of all the four science groups for a combination of variables $X_5, X_6, X_8$ reveals that
University female science group and College female science group form a cluster.

2. For a combination of variables $X_6$, $X_8$ for all the science groups, the analysis reveals that all the four science groups, viz. University male science, University female science, College male science and College female science groups cluster.

**Cluster Analysis of Combined Arts Groups and Combined Science Groups.**

We clubbed all the four Indian arts groups as one group and all the four Indian science groups into another group. An analysis of these combined groups for a combination of the variables $X_3$, $X_5$ and $X_6$ reveals that the combined Indian arts groups clusters with the combined Indian science group.

**Cluster Analysis of Combined University Students Group and Combined College Students Group.**

All the four arts and science groups of University students were combined to form one group. Similarly all the four arts and science groups of college students were combined to form another group. An analysis carried out in respect of the combined University students group and the combined college students group for a combination of the variables $X_3$ and $X_6$ reveals that University students group clusters with the college students group.
Analysis of Indian Students and Foreign Students

All the eight groups of Indian students (male and female) were combined into one group and all the groups of foreign students were combined into another group. The cluster analysis of the combined Indian students group and the combined foreign students group reveals no cluster for any combination of the variables $X_1^2$, $X_2$, $X_3$, $X_4$, $X_5$, $X_6$, $X_7$ and $X_8$.

Analysis for Indian Male Group and Indian Female Group

The four Indian male groups were combined to form one group, while the four Indian female groups were combined to form another group. For various combinations of all the eight variables $X_1$, $X_2$, $X_3$, $X_4$, $X_5$, $X_6$, $X_7$, and $X_8$ an analysis was carried out on the two groups, but no clustering could be seen.

The present investigation entitled 'A Psychometric study of College and University Students of Chandigarh' was an attempt to quantify the 'motivation' of the students of Punjab University departments and its affiliate colleges located at Chandigarh, through five major tests of 'motivation'.

In general, the findings of the present study help in quantifying and understanding the motivational urges of the students. No universal pattern was obtained on all the combined variables. In other words, the t-ratios, F-ratios and Cluster Analysis of various groups indicate some dissimilarities. The dependability of these variables of motivation is established through the present study by indicating the subtle but
quantifiable differences obtained on analysing these variables in respect of a certain student population.

The results of the present study warrant a general conclusion that the motivational pattern of students belonging to different groups does show some clustering as well as some dissimilarities.