CHAPTER III

METHODOLOGY
PROBLEM STATEMENT

The effects of perceived teacher styles on the intellectual commitment and college adjustment of students are mediated by individual-group factors of faculty-student relations.

ASSUMPTIONS

(1) The gender difference among students may give rise to different institutional and social expectations, when they come to college. An assessment of these may be relevant to understand the differences in their perceptions of teaching styles, need-systems, college environment, group atmosphere, family-peer interactions, intellectual commitment and college adjustment.

(2) At different educational levels, students may tend to focus on different stimuli and these may be differentially relevant to their intellectual commitment and college adjustment.

(3) Colleges may vary in terms of study conditions, library facilities, student-faculty relations and thus have differential meaning and relevance to students' need-systems, perceptions of college environment, group atmosphere, family-peer interactions, perceptions of teaching styles, intellectual commitment and college adjustment.

(4) Differences in the socio-economic background of students may be the preconditions of their learning and growth, which may differentially affect their intellectual commitment and
adjustment at the college.

(5) Students' needs and preferences may interact with college characteristics and in turn affect their intellectual commitment and college adjustment.

(6) The intellectual commitment and college adjustment of students may be contingent on their perceptions of college environment as it is likely to make unique demands on them in terms of participation, involvement, interaction and sharing of responsibilities.

(7) Family and peer interaction patterns available to students may be varied and these differences may influence their need systems, perceptions of college environment, group atmosphere, family peer interaction and perceptions of teaching styles. These may also influence their level of intellectual commitment and college adjustment.

(8) The accepting or rejecting atmosphere of the group to which the students belong may influence their intellectual commitment and college adjustment.

(9) The style of functioning of teachers may determine their mode, manner, and extent of interaction with the students. This may have a significant influence on the intellectual commitment and adjustment of college students.

(10) The perception of teacher styles may interact with individual-group factors of students and in turn influence their intellectual commitment and college adjustment.
(11) Students having a higher intellectual commitment may also show higher intellectual commitment at another point of time and vice versa.

OBJECTIVES

General Objectives: Two general objectives of this research are, to identify and assess (1) the effects of perceived faculty styles on the intellectual commitment and college adjustment of students, and (2) if the relationship between perceived faculty styles and intellectual commitment and college adjustment of students is mediated by the individual group factors of faculty-student relations.

Specific Objectives: The specific objectives are:

(1) To examine the main and interactional effects of sex, educational level and college type on the perceptions of teaching styles, need-systems, perceptions of college environment, family-peer interactions, perceptions of group atmosphere, intellectual commitment and college adjustment of students.

(2) To examine and assess the relationship between the socio-economic background of students and their intellectual commitment and college adjustment.

(3) To study the main effect of need-systems of students on their intellectual commitment and college adjustment.

(4) To identify the effects of different college environments on the intellectual commitment and college adjustment of students.
(5) To examine the influence of family and peer interactions on the intellectual commitment and college adjustment of students.

(6) To examine the extent of relationship between perceived group atmosphere and intellectual commitment and college adjustment of students.

(7) To identify and assess the relationship between perceived teaching styles and intellectual commitment and college adjustment of students.

(8) To examine the mediating effects of student characteristics, group factors and college environment on teaching styles and their relationship with intellectual commitment and college adjustment of students.

(9) To examine the stability of students' intellectual commitment at two points of time.

HYPOTHESIS

The following hypotheses have been formulated for testing in the present study:

(1) The extensive research review have indicated the possibility of gender differences on academic achievement, cognitive and personality measures etc. (Rudd, 1984; Kornbrot, 1987). Since the socio-cultural values put differential demands on the two genders, the obtained differences may actually be only superficial. Hence, the hypothesis formulated is: there are no significant gender differences among students on socio-economic status, need-systems, perceptions of college environment, family-peer interactions, group atmosphere, perceived
teaching styles, intellectual commitment and college adjustment.

(2) Research reviews have suggested dynamism in personality development. A result of this is the differences between two levels of education on perception of effective teaching styles, need-systems, social interaction, and academic performance (Banreti-Fuchs, 1975; Singhal, 1984, 1988). Since a difference between two levels of students may be due to the obvious difference in their maturity level, the differences would depend on the gap between two levels and the vice versa. This forms the rationale for this hypothesis: there are no significant differences by level of education of students in their socio-economic status, need-systems, perceptions of college environment, family-peer interactions, group atmosphere, perceived teaching styles, intellectual commitment and college adjustment.

(3) The colleges are known to differ in terms of structural components, such as teacher-student ratio, library facilities, per capita expenditure etc., but this may not necessarily be indicative of differences in student characteristics, behaviour and performance. Therefore, the hypotheses formulated is: there are no significant differences among students by college type in their socio-economic status, need-systems, perceptions of college environment, family-peer interactions, group atmosphere, perceived teaching styles, intellectual commitment and college adjustment.
(4) The socio-economic status of students is not significantly related to their intellectual commitment and college adjustment. The rationale for formulating this hypothesis is based on the inconclusive evidence on socio-economic status differences obtained by White (1982) and others.

(5) Several student characteristics (e.g., n-achievement and values) are known to have significant relationships with their academic performance (Sinha, 1970; Bowman, 1973; Wolfgang and Dowling, 1981). However, the relationship of student need-systems, their perceptions of college environment and group atmosphere to their intellectual commitment and college adjustment have not been investigated. Hence the present hypothesis has been formulated: There are no significant relationships among need-systems, perceptions of college environment, group atmosphere, intellectual commitment and college adjustment of students.

(6) The family and peer interactions constitute main socialising factors and these are found to have conclusive effects on students' motivation, achievement and intellectual commitment. However since the role of parents is not highly significant in the life of college students (Banreti-Fuchs, 1975) and that no conclusive evidence is available about the role of peers, the present hypothesis has been formulated: Family-peer interactions of students do not significantly affect their intellectual commitment and college adjustment.
(7) Students' preferences for specific faculty leadership styles have no significant predictive value for their intellectual commitment. The rationale for this hypothesis is based on the large though inconclusive evidence on the researches on teaching style differences (Joyce and Weil, 1972; Ornstein, 1984).

(8) Students' preferences for specific faculty leadership styles have no significant relationship with college adjustment. The rationale for this hypothesis is based on the inconclusive evidence on the teaching style differences obtained over a number of studies (Joyce and Weil, 1972; Ornstein, 1984).

(9) Students bring specific characteristics to the teaching-learning situation. There are influences in terms of demands made by the school/college environment also (Marjoribanks, 1982, 1986). These may interact with the students' perception of teaching styles and may or may not have an influence on their intellectual commitment and college adjustment. Hence the hypothesis: Several student and college characteristics interact with the perceptions of teaching styles, but do not necessarily have a mediating influence on their relationship to students' intellectual commitment and college adjustment.

(10) As students develop and mature, changes occur over time in their perceptions of teacher effectiveness characteristics, role of academic significance in life, role of authority figures (Banreti-Fuchs, 1975). It warrants the formulation
of this hypothesis: The relationship of perceived teaching styles and intellectual commitment of students is not stable over time.

METHODOLOGY

Sample: The universe of population consisted of students of University of Delhi. The sample selection was carried out in three stages:

Stage I: The procedure of stratified sampling was followed to categorize the 51 colleges under University of Delhi into three categories - High, Medium and Low. Based on the reports of the University Grants Commission, colleges showing good annual results, good library facilities, low student-teacher ratio and high per capita expenditure, were placed in the 'High' category. Colleges showing poor annual results comparatively poor library facilities, high student-teacher ratio and low per capita expenditure, were placed in the 'Low' category. The colleges showing medium position on the above characteristics, were placed in the 'Medium' category.

Stage II: Two colleges each (one female and one male) were selected from the three stratified categories by following the method of purposive sampling. The considerations in the selection of these colleges were - the size, accessibility and the readiness of the staff and students to participate in the study.

The selected colleges can be categorized in the following
Stage III: Out of the three curricula commonly available in colleges, namely, Science, Arts and Commerce, the Arts curriculum was selected for the study. The specific reason for this was the high enrolment of students, both boys and girls in all colleges under this curriculum.

Second and third year students of the arts curriculum were selected for the study. The rationale for this was that these students having stayed for one/two academic years in their respective colleges should be able to report about their objective impressions of college, class atmosphere, teachers and the like. The two academic levels were labelled as 'Educational level I' and 'Educational level II' respectively.

The selection of students from these two educational levels was also carried out using the purposive method of sampling. The availability of classes and the willingness of the teachers to forego their classes were taken into consideration.

The total number of students selected from the colleges can be distributed in the following manner:

<table>
<thead>
<tr>
<th>Manner</th>
<th>Boys' Colleges</th>
<th>Girls' Colleges</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>A I</td>
<td>A</td>
</tr>
<tr>
<td>Medium</td>
<td>B I</td>
<td>B</td>
</tr>
<tr>
<td>Low</td>
<td>C I</td>
<td>C</td>
</tr>
<tr>
<td>Category</td>
<td>Male Colleges</td>
<td>Female Colleges</td>
</tr>
<tr>
<td>----------</td>
<td>---------------</td>
<td>----------------</td>
</tr>
<tr>
<td></td>
<td>Educational</td>
<td>Educational</td>
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<tr>
<td></td>
<td>level I</td>
<td>level II</td>
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<td>High</td>
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<td>75</td>
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<tr>
<td>Medium</td>
<td>75</td>
<td>75</td>
</tr>
<tr>
<td>Low</td>
<td>75</td>
<td>75</td>
</tr>
</tbody>
</table>

Total number of students: 900

VARIABLES

Teaching Styles: Following Sinha's (1980) leadership effectiveness model, teaching style was operationalized as an individual faculty's way of influencing the group of students, contingent on the situation and his/her personality.

Sex: Sex comprised both male and female students of the colleges.

Educational-Level: The educational level of students was operationalized in terms of academic years in the college. The difference between two consecutive levels was of one academic year.

College-Type: College-type were distinguished on the basis of structural differences among colleges. These included the annual results of students, library facilities, student-teacher ratio and per capita expenditure.

Socio-economic Status: Based on the definition specified at the Michigan State Department of Education (1971), the socio-economic
status of students were operationalized in terms of the educational and occupational levels of both mother and father and the family income. Mothers' education, occupation and income was given equal weight to that of father's, as she was considered to be a major socializing agent in the family.

Need-Systems: Need-systems were operationalized as 'individuals' tendencies and preferences for certain psychological phenomena', like achievement, excitement, aggression, nurturance, socialbility and so on.

College-Environment: College environment involved information on the various aspects of college life and was defined as the individuals' perception of rules and regulations, rewards and restrictions, classroom climate, patterns in personal and social activities of the college. It was assumed that this would portray the degree to which the college is able to meet the academic, social and emotional demands of the members.

Family-Peer-Interactions: Family-peer interactions were operationalized as individual student's interactions with his/her father, mother, siblings and peers (both neighbourhood and the college). The responses were elicited by focusing on individuals' actual interactions (in relation to academic, social and emotional activities) with father, mother, siblings and friends.

Group Atmosphere: Group atmosphere was operationalized in terms of individual student's perception of warmth and acceptance in
his/her group, the degree to which they feel relaxed and at ease in the company of other group members.

**Intellectual Commitment:** Intellectual commitment was operationalized as intense and persevering involvement of students with intellectual activities. This was likely to be manifested through the students' active perusal and preference for intellectual (reading a serious book) over non-intellectual (watching a movie or gossiping) activities, and in reality spending more time on such activities.

**College Adjustment:** Following Whites' (1963), definition of psychological adjustment, college adjustment was operationalized in terms of students' competence in manipulating and influencing their academic environment on such dimensions as study skills, personal efficiency, curriculum adjustment, mental health and personal relations with faculty and friends.

**INSTRUMENTS**

**Teacher Style Questionnaire:** Perceived teaching styles were measured using a modified version of Sinha's (1976) leadership questionnaire, which he had developed to measure the three interaction styles of leaders in an industrial setting. These were the authoritarian, nurturant task and participative styles of leaders. The scale consisted of a total of 45 items, with 15 items each to measure the three styles. The items described the characteristics inherent in the subjects' supervisors. The subjects
were required to rate their perceptions of the most effective leader in their work setting on a five point scale ranging from 'Very true' to 'Very false' against all items.

Sinha and Choudhary (1979) reported the split-half reliability scores for the authoritarian, nurturant taskleader and participative styles as satisfactory ($r = .75, .71$ and $.67$ respectively). The theoretical validity of Sinha's model seems to be within acceptable range, as the evidence in favour of nurturant task leaders have invariably been obtained in studies conducted in industrial as well as academic organizations.

The leadership style questionnaire by Sinha was modified for use over students in the academic setting. A comparative set of 45 items was prepared, where the words 'subordinate' and 'supervisor' were substituted with 'student' and 'teacher' respectively. Eight such sets of questionnaires were administered to eight expert raters and their responses were obtained. A contingency table was drawn to see if the response categories were differentiative across raters on each item. The items which were non-differentiative were rejected. There were three such items, one on each of the three styles. In the final questionnaire, therefore, there remained only 42 items, with 14 items on each of the three styles. Items relating to each style were systematically distributed throughout the entire set, items related to the same style being separated by two others on the remaining styles.
Copies of the revised questionnaire were then administered to eight students and their responses obtained. The data were analyzed by applying analysis of variance test. The results are included in Table 1.

Table 1: Analysis of variance of teacher style data obtained over eight raters.

<table>
<thead>
<tr>
<th>Source</th>
<th>Degrees of Freedom</th>
<th>Mean Variance</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Items</td>
<td>41</td>
<td>20.94</td>
<td>2.26</td>
<td>ns</td>
</tr>
<tr>
<td>Raters</td>
<td>7</td>
<td>23.17</td>
<td>3.31</td>
<td>ns</td>
</tr>
<tr>
<td>Remainder</td>
<td>187</td>
<td>2.7</td>
<td></td>
<td></td>
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</tbody>
</table>

$r_{tt} = .88, P < .01$

This showed that there were no significant differences among the raters as well as the items in the questionnaire. This further strengthened the reliability of the test.

The intercorrelation matrix for the 42 items of the scale obtained in an earlier study by the author (M.Phil. dissertation, Srivastava, 1979), showed thirteen clusters of items, which were found to have high correlations with each other. It indicated that the items overlapped in measuring the teacher characteristics. This could be because some characteristics of the nurturant task style are common to the authoritarian style, while some other characteristics are common to the participative style.
A factor analysis of the item scores resulted in thirteen factors. These were (1) friendliness and cooperation, (2) strict disciplinarian (3) warm and affectionate attitude, (4) preference for task, (5) clear concept of task, (6) work involvement, (7) an understanding attitude toward students' problems, (8) treating students as equals, (9) authoritarian attitude, (10) preference for task completion under guidance, (11) non interference mixed with a helping attitude, (12) feeling of superiority and (13) no interference/tolerance. These factors, thus, represented the characteristic dimensions along which the styles may compare and differ.

A copy of the questionnaire is attached in Appendix A.

Need-System Inventory: Stern (1954) developed a scale called 'Activities Index' to measure the needs of college students; the needs being identified as "a taxonomic classification of the characteristic spontaneous behaviours manifested by individuals in their life transactions".

The present version of the scale, called Form 1158, consisted of 300 items distributed among 30 scales of ten items each. The scale reliabilities, estimated by means of Kuder-Richardson formulas 20 and 21 (Richardson and Kuder, 1939) were .71-.72. The test-retest reliability computed for 122 school teachers re-tested after intervals of one week, two weeks, one month, two months and one year were .68, .73, .68, .71 and .53 respectively. These were significantly greater than zero (P < .01).
For the present study the Activities Index was shortened on the basis of selections made by a group of experts in psychology (face validity). This included only 60 items, with two items from each of the 30 scales. This was done keeping in mind (a) the time factor in the completion of the total set of questionnaires by the students, and; (b) to exclude such items which were not relevant in the Indian setting. The items in the scale were arranged in such a way that items from the same scale were separated by 29 others on the remaining scales. The test was renamed Need-System Inventory.

The item-total intercorrelations computed over 900 students showed insignificant correlations among the items and significant correlations between the items and total. This indicated that the items measured separate need areas and the reliability of the scale was satisfactory.

A significance of difference between means of the two halves of the Inventory over 900 students yielded a t value of .02 which is not significant. Since no significant differences between the means of the two halves were obtained, this further strengthened the reliability of the test.

A principal component factor analysis of inventory yielded thirteen factors for the scale. These were as follows: (1) The first cluster of items was seen among items 16, 17, 26 and 30. These related to the students' needs for provocative, pleasure-seeking and critical behaviour versus passive, fearful, serious
and reflective behaviour. (2) The second cluster of items 5 and 10 related to aggressive and assertive behaviour versus sympathetic and tolerant behaviour. (3) The third cluster was visible in the items 17 and 18. These indicated practical and cautious nature versus impulsive and impractical nature. (4) The fourth cluster of items, such as, 14 and 15 showed such needs as attention-seeking and day-dreaming versus shyness and withdrawal from social situations. (5) A cluster of items 11 and 12 suggested a factor related to fantasied influence and intense expression versus restraint. (6) A cluster of items 1 and 2 showed a self-depreciating and self-defeating nature versus self-confident and achieving nature. (7) A cluster of items 3 and 4 suggested a friendly and adaptable nature versus isolated and resisting suggestions. (8) The eighth factor showing only item 13 indicated characteristics of an active and intense individual versus sluggish and passive individual. (9) Item 27 showed a sensitive and hedonistic nature versus austere and self-denial. (10) A practical and reflective versus speculative and rejecting need-system is indicated in the cluster of items 24 and 25. (11) Factor eleven showing item 23 suggested pleasure-seeking versus serious nature. (12) Items 19, 20 and 30 showed cluster of such characteristics as self-centred, warm and pleasure-seeking versus indifferent, work-oriented and self-loving nature and (13) The thirteenth factor included items 22 and 29. This showed an orderly and independent nature versus disorderly and dependent nature. The matrix indicated that approximately 60 per cent of the variance was explained by these factors.
The unrotated factor matrix and varimax rotated factor matrix of the inventory are presented in Table 1 and Table 2 respectively of Appendix B.

A copy of the inventory is given in Appendix A and a description of the 30 scales is presented in Appendix C (this is identical to College Environment Index).

**College Environment Index:**

The College Characteristic Index had been developed by Pace and Stern (1958) as a scale to measure the events associated with different types of activities in the academic settings. The Activities Index, described earlier, was used as the prototype in the development of this Index, the scales being carried over intact from the Activities Index. The parallelism was easy to maintain in most cases. For example, the need for gregarious participation could be easily reproduced in the form of a press for group social activities.

The College Characteristic Index contained 300 items in its original form. This version of the index, for 1158, was answered by well over 100,000 students. The internal consistency of the scale was estimated on the basis of the contribution made by each item to the total scale score. The item discrimination index was found to be .52, which showed that the items were highly consistent within their respective scales. The scale reliabilities, estimated by means of Kuder-Richardson formulas 20 and 21 were .65-.66. The test-retest reliability computed for 100 school-teachers
retested after an interval of 1 month was .86, which was significant at .01 level of significance.

In the present study, 60 items corresponding to those selected in the Need System Inventory were chosen (The items were arranged in a similar manner, that is, items from the same scales were separated by 29 others on the remaining scales). The test was renamed "College Environment Index".

The difference between the mean scores on the two halves of the test over 900 students was not found to be significant. This showed that the reliability of the test was adequately high.

The item-total intercorrelations computed over 900 students showed insignificant correlations among the items but significant correlations between items and the total. It also showed that the items measure separate areas in the college environment and yield satisfactory reliability of the scale.

A factor analysis of the college-environment scale scores using principal component method yielded thirteen factors: (1) The first cluster was seen among items 23 and 24. These related to the environment press for orderly and purposeful behaviour versus careless and pleasure-seeking behaviour. (2) A second cluster of items 13, 14 and 19 related to press for vigorous, self-satisfactory and self-centred behaviour versus slow, controlled and fellow-centred behaviour. (3) The third cluster was visible in the items 10, 11 and 19. These indicated the college press for open, unrestrained expressions versus weak, controlled and self-centered behaviour. (4) The fourth cluster of items 11 and
12 showed a press for fantasied, emotional behaviour versus practical and restrained behaviour. (5) The fifth cluster included items 17 and 18 which referred to the press for reflective and abstract thinking versus rash, impulsive and crude behaviour. (6) Items 14, 25 and 29 formed a sixth cluster showing a press for detached self-occupation with withdrawal versus self-display and dependence. (7) A seventh cluster of items 1 and 2 showed the press for self-achievement and success versus self-devaluation. (8) Item 4 representing the eighth cluster related to the college press for respect for authority and gregariousness versus non-compliance and self-detachment. (9) The ninth cluster of items 22 and 23 showed a press for orderliness and task oriented behaviour versus disorderly and pleasure seeking behaviour. (10) The tenth cluster related to items on Scales 26 and 27. These showed a press for critical assessment versus preoccupation with aesthetic experience. (11) The eleventh factor showed a cluster of items 7, 20, 27 and 28, showing a press for sensory satisfaction, self-indulgent behaviour versus providing love to others. (12) The twelfth cluster was evident in item 3 which related to press for acceptance of criticism versus resistance to suggestion. (13) The thirteenth cluster of items in 8 and 30 showed a press for problem solving and overcoming difficulty versus withdrawal from such tasks.

The unrotated factor matrix and varimax rotated factor matrix of the College Environment Index are given in Table 4 and Table
The correlation of this scale with need-system inventory ($r = .47$, $P < 0.01$) represents the press necessary for the satisfaction of individual needs. This indicated a satisfactory validity score.

A copy of the scale is included in Appendix A.

**Family-Peer Interaction Scale:**

The family-peer interaction scale was developed to assess the student's interactions with his/her family members and peers along three dimensions - frequency, mode and nature. It consisted of ten simple statements on specific and general issues chosen by a group of experts in psychology to obtain a general interaction pattern of the students with his/her father, mother, siblings and peers. The first two items related to the students' interaction regarding academic life. The third and fourth items related to decisions made about self and their personal life. The fifth and sixth related to their emotional life and satisfaction in meeting the expectations of the family members and friends. The last four items measured their ratings of self, in terms of positive-passive behaviour, positive-active behaviour, negative-passive behaviour and negative-active behaviour in interaction with the parents, siblings and friends.

The scale when administered to the student sample in the present study showed that students had quite clear understanding of the first six items. Most of the responses were in the same
direction. However, they seemed to have some difficulty in the comprehension of last four items dealing with self-behaviour analysis. This was explained in detail before they gave their ratings.

The item-total correlations showed high correlations among all items and also between the items and total. This may be due to the fact that all items dealt with family-peer interactions and were rated by subjects drawn from the same population.

A principal component factor-analysis of the items over 900 students yielded three factors. Items 1, 2 and 5 formed one cluster showing the student's tendency to confide and gain solace in the company of friends in matters of academic life. A second cluster emerged for items 3, 4 and 6 which showed the student's dependence on his/her parents in matters of personal decision and deriving pleasure in making them happy. The third factor emerged over the items 7, 8, 9 and 10. This related to the behaviour characteristics of the students as they interacted with their parents, siblings and friends. The unrotated factor matrix and varimax rotated factor matrix of the scale are given in Table 5 and Table 6 respectively of Appendix B.

A copy of the scale is included in Appendix A.

Group Atmosphere Scales:

Group Atmosphere Scale was initially developed by Fiedler (1962) to indicate the degree to which the leader feels accepted by the group and relaxed and at ease in his role. It is a ten
item semantic differential measure with scores ranging from 10 to 80.

The scale was a shortened version of the Group Atmosphere Scale developed by Fiedler, which was actually a takeover from Osgood's (1952) Semantic Differential Scale. Fiedler reported a split-half reliability coefficient of .90 on a score based on 20 items. The test-retest correlation was .68 for B-29 bomb crews. McNamara obtained a test-retest coefficient of .42 for the scale.

Fiedler's Group Atmosphere Scale having ten bipolar adjectives, was used to measure the students' perception of warmth and acceptance in the class group. Some modifications were made in the method of scoring. The students were asked to mark their perceptions on a 5 point scale ranging from 5 at the most favourable pole to 1 at the least favourable pole, 3 being the neutral score instead of the 7-point scale of Fiedler. This was done in order to make the scale's marking pattern better understood by the students.

The Group Atmosphere Scale was validated by correlating with the College Environment Index, which is also taken to be a measure of college atmosphere. The correlation was found to be $r = .33$ ($P < .01$), over 900 students. This showed that the external validity of the scale was quite satisfactory.

A copy of the scale is attached in Appendix A.

Intellectual Commitment Scale:

The intellectual commitment scale consisted of 27 items. It
included 20 items developed on the model of the job-involvement scale of Lodahl and Kejner (1965) and 7 items taken from the Teacher and Student Study Scale of Singhal (1977). The items related to such areas as the student's attitude towards his/her studies, his/her expectations from the college, his/her attitude towards fellow students and teachers and the general involvement with the academic life. The items were rated on a five point scale ranging from 'very true' to 'very false'.

The questionnaire was administered initially to eight raters and their responses obtained. A contingency table was drawn to see if the response categories were sufficiently differentiative across raters on each item. The items which were non-differentiative were rejected. There were 8 such items. In order to see if the remaining 19 items (used in the M.Phil. dissertation by the author, 1979), included all the expected areas of intellectual commitment, a definition of the term, as they understood it, was obtained in writing from ten faculty members and twenty college students. The content analysis of various definitions indicated two areas, which had not been included in the scale. These were, student's commitment towards the society and the role of intellectual pursuits in the formation of student's career. In order to include items on these two areas, some experts in psychology were requested to formulate some items. Three items were chosen by consensus for including in the scale. The final test had, thus, 22 items.
The intellectual commitment scale was again administered to another set of eight raters and their responses obtained. The data were analyzed by the analysis of variance test. The results are included in Table 2.

Table 2: Analysis of Variance of Intellectual Commitment Data Obtained from 8 raters.

<table>
<thead>
<tr>
<th>Source</th>
<th>Degree of Freedom</th>
<th>Mean Variance</th>
<th>F</th>
<th>P</th>
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</thead>
<tbody>
<tr>
<td>Items</td>
<td>21</td>
<td>36.12</td>
<td>1.72</td>
<td>ns</td>
</tr>
<tr>
<td>Raters</td>
<td>7</td>
<td>9.45</td>
<td>1.35</td>
<td>ns</td>
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<tr>
<td>Remainder</td>
<td>147</td>
<td>1.85</td>
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</tr>
<tr>
<td>Total</td>
<td>175</td>
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</tbody>
</table>

The table showed insignificant differences among the items of the scale. This strengthened the reliability of the scale. Also no significant differences among the raters were obtained.

The intercorrelation matrix for scale obtained in an earlier stage (M.Phil. dissertation, 1979) showed high correlations among the items.

A factor analysis of the scale, as part of the earlier study (Srivastava, 1979) showed that there were seven factors. These were:

(1) Importance of college studies,

(2) expectations from the college environment,
(3) the depreciation of college work,
(4) concern for good performance,
(5) involvement in intellectual life,
(6) interest in academic activities, and
(7) preference for academic activities over non-academic ones.

The nature of the factors further helped in establishing the relevance of the scale. A copy of the questionnaire is attached in Appendix A.

College Adjustment Inventory:

Developed by Henry Borow (1949), the College Inventory of Academic Adjustment was an attempt to identify behaviour symptoms among college students, which could be shown empirically to be associated with effective and ineffective academic performance.

The original scale had 90 items divided under six heads (1) curricular adjustment; (2) maturity of goals and levels of aspirations; (3) personal efficiency, planning and use of time; (4) study skills and practice; (5) mental health, and, (6) personal relations (with faculty and associates).

The split-half reliability coefficient for the composite inventory (correlated by Spearman and Brown method) were found to be $r = .92$ ($N = 155$ men) and $r = .90$ ($N = 130$ women). The test-retest reliability for 130 women with time gap of 10 days was $r = .92$.

The validity of the inventory was established by correlating
it with a two-semester grade-average for 155 collegemen. This was found to be .36 (P < .01). For 301 women, it was found to be .30 (P < .01). The correlation with the Wrenn Study Habit Inventory over 130 women students was .78 (P < .01).

For the present study, the scale was shortened in consultation with a group of education experts. By a criterion of 90 per cent agreement, thirty items were identified, five each from the six categories. This was done keeping in mind the time involved for students in completing the total set of questionnaires.

The category-total intercorrelations of the inventory over 900 students showed significant correlations among all categories and high correlations of the categories with the total. This showed that the six categories measured behaviour of students in the same area, that is, college adjustment. The highly significant correlations among categories and total further strengthens the reliability of the scale.

This scale correlated significantly with the Intellectual Commitment Scale (r = .69, P < .01, N = 900). This satisfied the validity requirement of the scale.

A copy of the scale is attached in Appendix A.

**Socio-Economic Status Form:**

A proforma was used to obtain information on the education and occupation of both the parents separately and also on the income of the family. In few cases where the father was missing from the home, only the mother's occupation, education and income was
used to determine the social status of the family. A copy of the performa is attached in Appendix A.

Treatment of Variables:

To test for the desired relationships, the following treatment of the variables was undertaken:

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Mediating Variables</th>
<th>Dependent Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived Teacher-Styles</td>
<td>Individual-Group Factors</td>
<td>Student Outcomes</td>
</tr>
<tr>
<td>(1) Authoritarian</td>
<td>(1) Socio-economic Status</td>
<td>(1) Intellectual Commitment</td>
</tr>
<tr>
<td>(2) Nurturant Task</td>
<td>(2) Need-System of Students</td>
<td>(2) College Adjustment</td>
</tr>
<tr>
<td>(3) Participative</td>
<td>(3) Family-Peer Interactions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(4) Group-Atmosphere</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(5) College-Environment</td>
<td></td>
</tr>
</tbody>
</table>

PROCEDURE

The principal of each college, identified for inclusion in the study, was approached to obtain permission for carrying out the study in that college. The teachers of the various honours and general courses were then approached. Students were engaged for two periods, each of 50 minutes duration (this was done keeping in mind the length of time required to answer the questionnaire).

A group of students going through the same course of study was
administered the questionnaires at one time. The investigator introduced herself to the students and noted down their roll numbers. The booklet containing the questionnaires were then distributed to the students. The following instructions were given to them - "The booklet before you contains a number of questionnaires. Start from the first questionnaire. Read the instructions very carefully and then answer accordingly. Go to the next questionnaire only when you have finished answering all the items in the first one. Similarly, take up one questionnaire after the other and finish them all. Do not leave any item unanswered. You have two full periods to complete your work. If you do not understand anything you can ask me. Thank you."

Most of the students in all the six colleges completed the assignment within the scheduled time. Those students who were slow in answering, were asked to take the booklet home and bring the completed questionnaires the next day. Most of the students returned it, while some did not care to return. The data collection extended over one full academic year.

**DESIGN**

Within the ex-post-facto category, the 2x2x3 factorial design was used, with the two levels of sex (male/female), two levels of education (BA IIInd Yr./IIIrd Yr.) and three levels of college type (High/Medium/Low). This has been shown in a tabular form, as follows:
Scoring and Coding:

The items in the teacher style questionnaire were scored using Thurstone's method of equal appearing interval. The answer categories ranged from 'Very True' to 'Very False'. The response 'Very True' was given the highest score of 5 and 'Very False' the least score of 1. The 'Doubtful' category received a score of 3. Total score was calculated by adding the scores on the three styles separately. This yielded three separate scores.

The items on the Group Atmosphere Scale were also scored in a similar manner. Here the categories 5 to 1 were identical with the scores. Total score was obtained by adding the scores on the individual items.

In the Intellectual Commitment Scale, the manner of scoring was the same as in the previous two scales, except for items 12, 13, 15 and 16 which were worded negatively such that values were assigned in reverse order.

In the Need-System Inventory, the student had to choose between 'like' and 'dislike' against each item. Similarly, in the College-Environment Index, they had to choose between the answer, 'true'.
and 'false'. In both the cases the correct response (given in Appendix D) was assigned a score of one. Total score in each case was calculated by adding up the scores on individual items.

For the Family-Peer Interaction scale, an initial scoring key was prepared. This was done by observing 20 students' responses on the ten items. Among the four answer categories, the category that was most readily chosen by the students was given a score of 4, 3, 2 and 1 respectively. In cases where father and mother were given equal weightage, both were given equal scores of 3.5 each or 2.5 each, the scores of both being added and divided by N. This key was then applied to score the student's answers on the scale. Total score was calculated by adding up scores on individual items. Scoring key is given in Appendix D.

The College Adjustment Inventory was scored on a three-point scale, 'Yes', 'Undecided' and 'No'. The acceptable response was given a score of 2 and the unacceptable was given a score of zero. Score 1 was given to items marked 'undecided'. Total score was obtained by adding up the score on the individual items.

The scoring of the socio-economic status performa was done at three levels - parental education, parental occupation, and family income. The parental education was divided into four levels - Below Matric, Above Matric but non-Graduate, Graduate and Above Graduate. These were given scores 1, 2, 3 and 4 respectively. The parent's occupation was coded at three levels - no specific occupation, employed and business but non-professionals and
professionals. These were given scores 1, 2 and 3 respectively. The family income was scored, starting from below Rs.500 per month, upto Rs.3000 and above per month, with a difference of Rs.500 at each level. The lowest income was given a score of 1 and the highest a score of 7. The scores on all the three socio-economic levels were added to yield a composite socio-economic status score.

The coding and scoring scheme of all the scales are presented in Appendix D.

Method of Analysis:

The data have been analysed by using a variety of statistical techniques, such as, t-tests, Pearson and Rank order correlations, analysis of variance, stepwise regression analysis, factor analysis and cross-lag correlation analysis procedures.
The data obtained were analysed using Students' 't', Pearson's coefficient of correlation, analysis of variance, multiple regression analysis, factor analysis and cross lagged correlation analysis procedures. The variables under study included students' perceptions of teacher's styles (authoritarian nurturant task and participative), parental socio-economic status, perceptions of college environment, student's need-orientation, perceptions of group atmosphere, family-peer interactions, intellectual commitment and college adjustment. These variables were analyzed by using three classificatory variables - students' gender differences (male and female), educational level (B.A. IIInd year and B.A. IIIrd year) and college type (High, Medium and Low).

The abbreviations used for 6 colleges were as follows:

College A - High Male College
College B - Medium Male College
College C - Low Male College
College A₁ - High Female College
College B₁ - Medium Female College
College C₁ - Low Female College

The abbreviations used for the different variables were as follows:

S - Sex
EL - Educational level
CT - College Type
Comparison of Colleges

Results for different comparisons are reported separately as follows:

(a) College A and College B

The means, standard deviations, t values and significance level of differences for students of College A and College B on parental socio-economic status, college environment, need-systems, perceptions of group atmosphere, family peer interactions, perceptions of authoritarian, nurturant task and participative styles, intellectual commitment and college adjustment are shown in Table 1.