CHAPTER-IV

DATA COLLECTION AND ANALYSIS

This Chapter includes a discussion of the description, development and mode of administration of the instruments used for data collection in this study.

Instruments Used

1. To get information about student demographic characteristics, a Student Background Information Sheet was used.

2. To get an index of discrepancy (between Student Educational Orientations and their Perception of the Academic Environment), and also to get, at the same time, Profiles of Student's Educational Orientations and prevailing Academic Environment, the Student Orientation - Perception Questionnaire (SOPQ) was developed by the investigator.

3. Academic Ability - to get an index of this measure, Cattells Culture Fair Scales 3A and 3B, applicable to college students, were made use of.

4. An index of the Students' Cognitive Style of functioning in terms of Field dependence/independence, was measured using the short form of Witkins Embedded Figures Test developed by Jackson (1956).

5. Academic Satisfaction, or the extent to which a student was satisfied with his Academic Environment was
measured by the Academic Satisfaction Scale developed by the investigator.

6. **Academic Achievement** - To get an index of this measure, the aggregate of total percentage of marks scored by the student in the previous two consecutive examinations were taken from official records.

**Development Of The Instruments**

1. **The Student Background Information Sheet**

This consisted of questions concerning various demographic items, such as earlier schooling, college, age, sex, parents education, occupation and income, living arrangement, as well as type of curriculum presently being attended.

2. **Development of the Student Orientation - Perception Questionnaire (SOFQ)**

As mentioned earlier, Barnard (1938), and White (1959) point out that behaviour is 'effectant' when it is simultaneously 'efficient' and 'effective'. In an educational setting, this 'effectance' would refer to a congruence or match between individual needs or Educational Orientations and the Characteristics of the Academic Environment.

A number of studies concerning student perceptions of the college environment have been performed by Pace (1963), Stern (1963), as well as studies on student
environment congruence by Pervin (1967), Stern (1963). However, these studies do not deal with a direct assessment of student attitudes regarding education and the stress is mostly on the effect of the environment on the individual. Studies by Morstain (1973) did measure this aspect of student education, but did not, on the other hand, take into account a perception of the environment or its effects. Thus, this instrument aimed at measuring 'effectant' behaviour, i.e., taking into account both the person and the environment, as it relates to the purposes, processes and policies of education.

Also taking into consideration the role orientation perspective, where a student himself should have some say as to the nature of his academic experience, so as to help foster characteristics such as independence and initiative, (Chickering, 1969), as well as the fact that, any attitudes the students have towards education, and the subsequent perception of their environment is influenced both by his basic personality make-up and other outside socialising influences (such as family and peers), the strategy used for this study was one that relied on student perceptions. As Gaff et. al. (1973) point out; the primary advantage of this approach is that it provides direct information - not only about how students view their environment, but also about what their orientations are in relation to their perception of the environment.
Thus, for the purpose of this study, performance is explained in terms of the extent and direction of discrepancy between a person’s orientation and his perception of the environment. This is operationalised as the difference in scores between Educational Orientation and Academic perception of the student.

The disadvantages most commonly reported in following this strategy of student perception, i.e., inaccuracy of description, is rejected on two grounds:

1. In their synthesis of college environment research, Feldman and Newcomb (1969) report on the validity of questionnaires that rely on student perceptions, and say that "the known but small (distortion) effects of personality and attitude characteristics of individuals and the larger and more significant influence of individuals location in the environment, have not prevented these instruments from advancing the art of measuring college environment, given appropriate methodological and interpretative caution...."

2. As performance is being explained in terms of discrepancy values (between student orientations towards education and perceptions of the environment) the distortion effects or significant influences of personality (attitude and location of individual) may well help in identifying the mediating factors that influence development of orientation and perception of environment.
To assess the discrepancy between student orientation and perception of the environment, the Student Orientation Perception Questionnaire (SOPQ) was developed by the author on the basis of the findings of the first part of the study, and later attention on the theoretical emphasis of the effect of discrepancy values on performance. The SOPQ is a double headed questionnaire and measures not only the Educational Orientation of Students, but also their perception of the existing Academic environment.

As pointed out earlier, on the basis of the findings in the first phase, Educational Orientations were found to be ineffective by themselves as predictors of performance, though some trends did show up regarding the various types of orientation held by students. It was therefore decided to add another classification, that of measuring perception, so as to get an index of discrepancy as a predictor of performance. Thus, the questionnaire provides, apart from the index of discrepancy, a profile of student Educational orientation on five dimensions as well as a parallel profile of the existing environment along the same dimensions.

**An Overview Of The SOPQ**

At the first phase of the study, the instrument drew heavily upon Norstain’s Educational Orientation Survey (1976). At the next phase, it was decided to keep the various dimensions and categories intact while
developing the new Student Orientation - Perception Questionnaire.

**Dimensions of Education and Selection of Items**

Students vary in the extent of structure they require in their environment depending on their personality styles, socialising influences etc. Morstain and Grey (1973) conceptualized five major dimensions along which students might be expected to differ in their views and attitudes. These five dimensions are as follows:

- **Purpose** - Regarding the purpose(s) of a college or university education.
- **Process** - Regarding different teaching/learning modes.
- **Power** - Regarding decision making and student faculty roles, and evaluation techniques.
- **Peer Relations** - Regarding different modes of association with peers.
- **Public Relations Position** - Regarding community/society and student roles.

At this stage, the component items (within various dimensions) of the Questionnaire were formulated such as to enable the students to answer each statement both from the viewpoint of their educational orientations, as well as their perception of the existing environment.
just by responding to two different codes: For eg:

Item: "Class lectures closely follow the assigned syllabus" (from the dimension, Purpose).

In responding to the 'Orientation' classification, the following code was used.

1. I would not like it at all if............
   'class lectures.............'
2. I would not like it if............... 
3. I would like it if.................
4. I would like it very much if ......

In responding to the 'Perception' classification, the instructions given/code used was,

1. In my course/college/community, this is not at all true, that.......'class lectures.......'
2. This is not true.............. 
3. This is true..............
4. This is very true...........

A pilot survey on a random sample (N=40), resulted in the elimination of a few items, as well as alterations in a few, and the final form consisted of 10 scales, two scales in each of the five dimensions noted above. The item scale correlations for the various scales based on testing a subsequent random sample (n=25) is in Table 4.1 and 4.2 with the table of component items.
Table 4.1: Showing the Component items for SOPQ Scales and Item-Scale score correlation for the classification - Educational Orientation.

<table>
<thead>
<tr>
<th>Scale</th>
<th>Items &amp; Item-Scale score r's</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achievement</td>
<td>1 (.50); 11 (.62); 21 (.70); 31 (.68); 41 (.72)</td>
</tr>
<tr>
<td>Assignment</td>
<td>Learning 2 (.51); 12 (.50); 22 (.57); 32 (.62); 42 (.60)</td>
</tr>
<tr>
<td>Assessment</td>
<td>3 (.61); 13 (.61); 23 (.60); 33 (.58); 43 (.50)</td>
</tr>
<tr>
<td>In Study</td>
<td>4 (.69); 14 (.65); 24 (.52); 34 (.62); 44 (.68)</td>
</tr>
<tr>
<td>Inquiry</td>
<td>5 (.75); 15 (.58); 25 (.70); 35 (.58); 45 (.62)</td>
</tr>
<tr>
<td>Interaction</td>
<td>6 (.62); 16 (.58); 26 (.61); 36 (.52); 46 (.59)</td>
</tr>
<tr>
<td>Affiliation</td>
<td>7 (.54); 17 (.64); 27 (.56); 37 (.72); 47 (.63)</td>
</tr>
<tr>
<td>Affirmation</td>
<td>8 (.69); 18 (.53); 28 (.58); 38 (.61); 48 (.60)</td>
</tr>
<tr>
<td>Involvement</td>
<td>9 (.52); 19 (.55); 29 (.59); 39 (.53); 49 (.46)</td>
</tr>
<tr>
<td>Informal</td>
<td>Association 10 (.48); 20* (.45); 30* (.49); 40 (.151); 50* (.58)</td>
</tr>
</tbody>
</table>

*Items reverse prior to scoring. 

\[
\begin{align*}
n &= 25 \\
p &< .05 \text{ level when } r = .381 \\
p &< .01 \text{ level when } r = .487
\end{align*}
\]
Table 4.2: Showing the component items for SOPQ Scales and item scale score correlation for the classification, Perception of Academic Environment

<table>
<thead>
<tr>
<th>Scales</th>
<th>Items &amp; Item-Scale Score r's</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achievement</td>
<td>1 (.63); 11 (.68); 21 (.11); 31 (.68); 41 (.70)</td>
</tr>
<tr>
<td>Assignment learning</td>
<td>2 (.62); 12 (.48); 22 (.59); 32 (.68); 42 (.71)</td>
</tr>
<tr>
<td>Assessment</td>
<td>3 (.70); 13 (.58); 23 (.56); 33 (.59); 43 (.59)</td>
</tr>
<tr>
<td>Independent Study</td>
<td>4 (.62); 14 (.68); 24 (.58); 34 (.63); 44 (.64)</td>
</tr>
<tr>
<td>Inquiry</td>
<td>5 (.51); 15 (.60); 25 (.61); 35 (.50); 45 (.68)</td>
</tr>
<tr>
<td>Interaction</td>
<td>6 (.65); 16 (.58); 26 (.70); 36 (.45); 46 (.56)</td>
</tr>
<tr>
<td>Affiliation</td>
<td>7 (.63); 17 (.71); 27 (.68); 37 (.59); 47 (.71)</td>
</tr>
<tr>
<td>Affirmation</td>
<td>8 (.57); 18 (.59); 28* (.67); 37 (1.68); 48* (.82)</td>
</tr>
<tr>
<td>Involvement</td>
<td>9 (.53); 19 (.46); 29 (.59); 39 (.64); 49 (.72)</td>
</tr>
<tr>
<td>Information</td>
<td>10 (.48); 20* (.52); 30* (.59); 40 (.62); 50* (.68)</td>
</tr>
</tbody>
</table>

*Items reversed prior to scoring

n = 25  
\( p < .05 \) level when \( r = .381 \)  
\( p < .01 \) level when \( r = .487 \)
The consistently high correlation of the items in each scale with the total scale score on both Orientation & Perceptions as shown in the Tables 4.1 and 4.2 respectively justifies the inclusion of the item in that particular scale (All the reported correlations were significant at the .05 level). The correlations for the negatively worded items (20, 28, 30, 48, 50) are not in these tables, as item-scale scores correlations were calculated after reversing the scoring of these items.

The scales, with their dimensions as mentioned earlier, are listed below, along with scale descriptions. Each scale consists of five items which measure both the Orientation and Perception classifications. The total number of items in the questionnaire is 50. All these items are responded to (in both classifications) using a 4 point Likert code.

<table>
<thead>
<tr>
<th>Scale</th>
<th>Dimensions</th>
<th>SOPQ Exploratory Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achievement</td>
<td>1. Purpose</td>
<td>Inquiry</td>
</tr>
<tr>
<td>Assignment Learning</td>
<td>2. Process</td>
<td>Independent Study</td>
</tr>
<tr>
<td>Assessment</td>
<td>3. Power</td>
<td>Interaction</td>
</tr>
<tr>
<td>Affiliation</td>
<td>4. Peer Relations</td>
<td>Information</td>
</tr>
<tr>
<td>Affirmation</td>
<td>5. Public Position</td>
<td>Association</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Involvement</td>
</tr>
</tbody>
</table>
Among these 10 scales, five scales relate to a general 'Preparatory' Orientation to college under the classification Educational Orientation. This refers to college being valued by students for its preparatory function, in terms of acquiring useful knowledge, skills and social roles. The 'Exploratory' orientation here refers to college being valued for the opportunities it affords for exploring one's interests, ideas and personal identity. This is also measured by five scales along the five dimensions.

Under the classification Perception of Academic environment, the Preparatory Perception (measured by the same five scales) refers to the students perception of the environment being of a prevailing preparatory nature, and the Exploratory Perception explains the environment in terms of its unstructured or exploratory possibilities.

Scale Description For Both Classifications, Orientation and Perception along with Sample Items From Each Scale

Preparatory Educational Orientation/Environmental Perception Scales

Achievement (Ach.)

This scale measures the extent to which a student would like to have and the extent to which his college offers opportunities for acquisition of specific skills, credentials, receiving of external
rewards leading to satisfaction, and the achievement of a priori goals. The student who identifies with this scale on both classifications, Orientation and Perception, has a practical, goal oriented outlook and perceives the environment as providing sufficient opportunities for achieving the same.

Eg....... The course I am in consists only of areas of learning that will be useful to my future career. ........A good result is an indicator of the hard work that has gone into a course.

Assignment Learning (AI)

The person who agrees with a high proportion of items on this scale reports that he learns best by meeting specific, clear-cut formal requirements and that he finds his environment sufficiently structured to suit his needs. ........The class lectures closely follow the assigned syllabus. ........The academic programmes are organised into formal courses with regular classes, tests and assignments.

Assessment (Ass)

The student scoring high on these scales likes to have his work evaluated by teachers, and relies on examination/grades as providing a measure of his capabilities. On the classification, Perception, the student perceives the evaluation and examination methods
as being satisfactory.

The learning that takes place in a course is measured by the final examination.

A students' marks/grades are good indicators of what he understands in a course.

Affiliation (Affl.)

The student who agrees with the items on this scale enjoys belonging to organised extra curricular groups and sees in his academic environment, sufficient opportunities for doing so.

Participation in student organisations and college activities help in making more friends.

Extra-curricular activities such as clubs and interest groups are considered an important part of college life.

Affirmation (Affr.)

The student who agrees on these items perceives the society as being a stable one, with the public officials mainly resolving civic and other problems. He also expresses a preference for such a society along with maintaining a neutral position on controversial issues and caution in advocating social changes.
The basic issues of today are resolved mainly by our public officials. Student protests are not given any importance in my college/campus.

**Scales from the Exploratory Orientation/Perception Area**

**Inquiry (Inq.)**

The student responding positively to the items on this scale stresses the value of insight, personal discovery and enjoys satisfaction of inquiry, irrespective of extrinsic rewards. He also perceives the environment as being one which provides sufficient opportunities for exploration of such ideas.

The main aim of education is one of providing opportunities for explaining one's ideas, interests and personal identity.

I am asked to study the relationships between several fields rather than learning many facts about just one area.

**Independent Study (IS)**

The items on this scale identifies a student who likes working on his own, as well as perceiving
sufficient opportunities for doing so.

...... I am asked to study along my own lines rather than completing required assignments and tests.

...... Independent study and original research is given more emphasis than a regular course.

**Interaction (Int.)**

The student agreeing with the items on this scale expresses the belief that students should participate in determining the nature and format of an academic program, as well as perceiving in the environment sufficient opportunities for doing so.

...... Students are involved with teachers/university committees in establishing degree and graduation requirements.

...... Teachers decide what topics/subjects are important for students to know.

**Information Association (IA)**

The student reacting positively to the items on this scale expresses little need for participation in formal well planned events — his association with fellow students tend to be unstructured and he perceives the environment as being one that does not compel him to participate in such organised events.
I attend more informal get togethers than planned social functions.

I am asked to attend meetings of college and student organisations (scoring is reversed for this item).

Involvement (Inv.)

The person identifying positively with the items on this scale shows a strong interest in social and political affairs, and perceives in his environment sufficient opportunities for participation in such affairs. He also expresses a readiness to take a stand on public issues.

College students are involved in correcting the injustices of society.

Issues of social and political nature are matters for student involvement.

The items comprising all these scales are presented in Appendix B.

The items in the different scales were randomized in order to avoid a response set. Only those items considered relevant to the Indian context, based on the findings of the first part of the study, were retained.
Administration

The SOPO is a simple, self-administering inventory. Students read through the questionnaire and respond according to a four-point Likert code. As it is a double-headed questionnaire, the students will have to take care and provide answers under both classifications, Orientation and Perception. The order of answering is left to their convenience—they can either go through the questionnaire twice or answer both sides simultaneously. The time taken in answering is around 45 minutes.

Scoring

Scale scores for the SOPO are calculated in the following way—there are 5 items per scale, and each item has a possible range of 1 to 4. Certain items are reversed in scoring prior to calculation of scale scores. Raw scale scores are summative over all five items. Scale scores range from 5 to 20. No scale score is computed for individuals who omit 2 or more than 2 items for a particular scale. For individuals who omit only one item, the mean score, to the nearest whole number of the remaining items is taken as the score for that particular item. The procedure is followed for both classifications—Orientation and Perception.
Calculation of the Discrepancy Index

The raw scores calculated above were taken as the base in calculating the discrepancy index, which is operationalised as the difference in scale scores between the classifications of Orientation and Perception. It was decided that the discrepancy index would be more meaningful when both the direction of discrepancy (between orientation and perception) as well as the strength of discrepancy (high or low) were taken, and this would also show up better when the degree of response on all scales by the individual was considered with reference to the degree of response of the constituent group. Therefore, all the raw scores were converted into standard scores \( z \), and the following formula applied to get an index of discrepancy on all dimensions, as well as total discrepancy on Orientation/Perception Scores:

\[
d = \left\{ \frac{(x_{pk}) + (x_{ok})}{(x_{pk} - x_{ek})} \right\} \left\{ \frac{(y_{pk}) + (y_{ek})}{(y_{pk} - y_{ek})} \right\}
\]

\[
d = (x) (y) (x') (y')
\]

Where \( x_{pk} \) is the standard score of the individual for the preparatory orientation scale.

\( x_{ek} \) is the standard score of the individual for the exploratory orientation scale.
\( y_{pk} \) is the standard score of the individual for the preparatory perception scale.

\( y_{pk} \) is the standard score of the individual on the exploratory perception scale.

and

\((x)\) and \((x')\) are calculated without taking standard score signs into account.

\((y)\) and \((y')\) are calculated after taking standard score signs into account.

**Calculation of Difference in Orientation/Perception Scores**

\[(x) \ (y) = Do\]

This calculation also provides an index of the difference in scores (Do), (with both strength and direction) between Preparatory and Exploratory Orientations, and will generate a profile of the preferred orientation of the student on all five dimensions.

Similarly, \((x') \ (y') = DP\)

This provides a profile of the student's perception of his academic environment, along the same five dimensions, and will give an indication as to whether the prevailing environment is preparatory or exploratory in nature.
The above calculations provide:

1. Do: An index of difference scores between preparatory and exploratory educational orientation.

2. DP: An index of difference scores between Preparatory and Exploratory Perception of Academic environment.

3. An index of Discrepancy scores between Educational Orientations and Academic Perception on all dimensions.

**Reliability**

**Test-retest coefficients.**

The temporal stability of scale scores was assessed by Pearson correlation coefficients for a sample of college students (n = 50) over a period of 10 days. At the time of first administration, no mention was made of a retest ten days later.

The Pearson coefficients for the different scales for both Orientation and Perception classification were as follows:
Table 4.3: Showing test-retest reliability correlation coefficients for all scales of the SOPQ on classifications of Orientation and Perception.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>SOPQ Scales</th>
<th>Educational Orientation</th>
<th>Environmental Perception</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Achievement</td>
<td>.75</td>
<td>.88</td>
</tr>
<tr>
<td>2</td>
<td>Assignment learning</td>
<td>.75</td>
<td>.93</td>
</tr>
<tr>
<td>3</td>
<td>Assessment</td>
<td>.88</td>
<td>.93</td>
</tr>
<tr>
<td>4</td>
<td>Affiliation</td>
<td>.92</td>
<td>.89</td>
</tr>
<tr>
<td>5</td>
<td>Affirmation</td>
<td>.73</td>
<td>.90</td>
</tr>
<tr>
<td>6</td>
<td>Inquiry</td>
<td>.85</td>
<td>.89</td>
</tr>
<tr>
<td>7</td>
<td>Independent Study</td>
<td>.82</td>
<td>.86</td>
</tr>
<tr>
<td>8</td>
<td>Interaction</td>
<td>.84</td>
<td>.91</td>
</tr>
<tr>
<td>9</td>
<td>Information-Association</td>
<td>.74</td>
<td>.93</td>
</tr>
<tr>
<td>10</td>
<td>Involvement</td>
<td>.80</td>
<td>.90</td>
</tr>
</tbody>
</table>

\[ n = 50, \quad p < .01 \text{ level when } r = .354 \]

As can be seen in the Table 4.3, the test-retest reliability values of all the subscales are very high. All the correlations were significant at the .001 level. The reliability of the test was fairly well established.
Inter-correlations of the SOPO scale scores were calculated for both classifications - Educational Orientations, and Perception of the environment. The following table presents the inter-scale score correlation values.

**Table 4.4: Showing the Inter-correlations of SOPO Scale scores on Educational Orientations**

<table>
<thead>
<tr>
<th>Preparatory Scales</th>
<th>Exploratory Scales</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ach, Al, Ass, Affl, Afr, Inq, IS, Int, IA Inv</td>
<td>Ach, Al, Ass, Affl, Afr, Inq, IS, Int, IA Inv</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Preparatory Scales</th>
<th>Exploratory Scales</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Ach</td>
<td>.62, .36, .38, .45, -.23, -.54, -.20, -.21, -.31</td>
</tr>
<tr>
<td>2. Al</td>
<td>.43, .35, .28, -.15, -.16, -.21, -.28, -.41</td>
</tr>
<tr>
<td>3. Ass</td>
<td>.42, .60, -.21, -.41, -.35, -.19, -.29</td>
</tr>
<tr>
<td>4. Affl</td>
<td>.32, -.18, -.12, -.13, -.30, -.21</td>
</tr>
<tr>
<td>5. Afrs</td>
<td>-.09, -.19, -.22, -.41, -.27</td>
</tr>
<tr>
<td>6. Inq</td>
<td>.60, .48, .34, -.21</td>
</tr>
<tr>
<td>7. IS</td>
<td>.32, .40, .21</td>
</tr>
<tr>
<td>8. Int</td>
<td>.19, .30</td>
</tr>
<tr>
<td>9. IA</td>
<td>.19</td>
</tr>
<tr>
<td>10. Inv</td>
<td>.19</td>
</tr>
</tbody>
</table>

n = 50  
ip = .05 level when \( r = .273 \)  
ip = .01 level when \( r = .354 \)
<table>
<thead>
<tr>
<th></th>
<th>PREPARATORY SCALES</th>
<th>EXPLORATORY SCALES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Ach.</td>
<td>.58</td>
<td>.66</td>
</tr>
<tr>
<td>2. Al.</td>
<td>.52</td>
<td>.43</td>
</tr>
<tr>
<td>3. Ass.</td>
<td>.38</td>
<td>.44</td>
</tr>
<tr>
<td>4. Affl.</td>
<td>.40</td>
<td>.26</td>
</tr>
<tr>
<td>5. Affr.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Inq.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Is.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Int.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. IA.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Inv.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

n = 50  p < .05 level when r = .273
p < .01 level when r = .354
The above correlations between the two sets of scales along the two areas Exploratory and Preparatory Orientation and Perception show positive correlations within the areas. The Scales, Achievement through Affirmation are positively correlated with each other for both the classifications of Orientation and Perception. The same is also true under the area Exploratory Orientations and Perceptions—the Scales, Inquiry through Involvement are positively correlated with each other.

The intercorrelations between the Scales in the two areas are negative in direction i.e., Correlations between Scales on the Preparatory Orientation on the one hand, and Exploratory Orientation on the other, between Preparatory Perception Scales on the one hand and Exploratory Perception Scales on the other, all show up a negative correlation. For e.g., for the scales which measures the dimension, purpose, along the two areas, correlations between Achievement and Inquiry, the value of \( r = -0.23 \) for Orientation, and \( r = -0.30 \) for Perception of Environment.

These intercorrelations indicate that the five scales, Achievement through Affirmation can cluster together for both Orientation and Perception Classifications as indicative of a
preparatory area and the other five, Inquiry through Involvement, can cluster together as representative of an exploratory area. The positive correlations within the areas and negative correlation between them clearly indicates that the two, Exploratory Orientations/Perceptions of Academic Environment, and Preparatory Orientations/Perception are distinctive and mutually exclusive.

Validity

The item-wise face validity of the inventory indicated a high applicability to the sample studied. Due to a lack of external criteria, no other validation was carried out at this stage.

Description And Mode Of Administration Of Cattell's Culture Fair Test

The Culture Fair Intelligence Test aims to bring out the most consistent core of basic mental capacity - tests that will more clearly separate the individuals reasoning ability, the fluid intelligence – as opposed to the crystallised intelligence, that which is influenced by schooling, social class etc, (Cattell, 1943).

Because of its culture-fairness, the culture fair test is of superior applicability to groups of
students differing in both racial and social backgrounds as well as those differing in areas of academic specialisation.

Cattell's Culture Fair Intelligence Scales 3A and 3B (for college students) are made use of in this study.

The forms A and B have been constructed to be as nearly as possible equal in difficulty and are exactly similar in design, number of items, position of correct responses etc. Each form in scale 3 consists of 4 sub-tests - series, classification, matrices and topology (condition). In both the forms, the items have been arranged in order of increasing difficulty.

**Test administration**

The culture fair intelligence tests (Cattell, 1973) were adapted to administration as group tests also. Form A was administered first. The printed booklets with the sub-tests were distributed to the subjects. The general instructions (for both Form A and B) were read out from the manual (Cattell 1973) - these explain to the subject what the test is about.

After this, the instructions for the sub-test was read out. The experimenter explained the examples to the subjects clearly. After this, the subject was
allowed three minutes to answer the sub-test. In this manner, the other three sub-tests were also explained and timed. After all the sub-tests had been answered, the answer booklets were collected quickly.

The subjects were given separate answer sheets to record their responses.

The instruction for Form B was the same as in Form A - the only difference being in the explanation of the examples.

**Scoring**

As separate answer sheets were used in this study, the scoring was done by a stencil key fitted exactly over the answer sheet. One mark was given for each correct response. If more than one response was given for each correct response, if more than one response was given, no marks were allotted. In the sub-test 2 of both forms, there had to be two answers for each item and both had to be correct to get one mark. The number of answers correct for each of the four sub-tests were added to get the total raw score. The proper norms table was then used to convert the raw scores into IQ values.

**Reliability**

All the coefficients were found to be high.
when evaluated across large and widely diverse samples (Cattell, 1959). The reliability of scale 3 as reported in Table 3.2 of the manual (1973) is as follows:

1) Reliability of Culture Fair Tests
   Scale 3

<table>
<thead>
<tr>
<th>Method of Evaluation</th>
<th>Avg. Reliabilities for full test across samples (A + B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Consistency over items (Split half)</td>
<td>.85</td>
</tr>
<tr>
<td>2. Consistency over parts - Interform r's corrected to appropriate length</td>
<td>.82</td>
</tr>
<tr>
<td>3. Consistency over time - Test retest, time interval varying from immediate to one week</td>
<td>.82</td>
</tr>
</tbody>
</table>

2) In the exploratory study undertaken by the investigator, consistency over parts, with inter-correlations between the two forms, on a sample of 100 students, comprising of students from both Engineering and Social Sciences was found to be $r = .89$. 
Validity

Concept and concrete validity for the scale measuring the pure factor (g) as reported in Table 3.4 of the manual (1973) is as follows:

<table>
<thead>
<tr>
<th>Method of Evaluation</th>
<th>Avg. Validities across samples for (A + B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Concept validity</td>
<td></td>
</tr>
<tr>
<td>(direct r's with pure intelligence factor)</td>
<td>.92</td>
</tr>
<tr>
<td>2. Concrete validity</td>
<td></td>
</tr>
<tr>
<td>(r with other tests of general intelligence, including the SAT, Wechsler etc.)</td>
<td>.69</td>
</tr>
</tbody>
</table>

Description And Mode of Administration Of The Short Form Of Witsin's Embedded Figures Test (EF3)

Every individual has preferred ways of organising all that he sees and remembers and thinks about. Consistent individual differences in these ways of organising and processing information and experience have come to be called cognitive styles. One of the most studied of these styles, field dependence vs. field independence refers to a consistent mode of approaching the environment in analytical as
opposed to global terms. Field independent persons tend to articulate figures as discrete from the background and to easily differentiate among objects from embedding contexts, whereas field dependent persons tend to experience events globally in an undifferentiated fashion (Within et al., 1962).

Within et al. (1962) constructed a battery of tests to identify the cognitive style Field dependence/Independence among individuals. Each of these tests requires a person to separate one item from the field or context of which it is a part and which therefore exerts a strong influence upon it.

The battery included tests such as the Rod and Frame Test, tilting room-tilting chair test and the Embedded Figures test.

In this study, only the Embedded Figures Test from the battery was used to differentiate the styles. This test requires the subject to separate an item from the field in which it is incorporated.

The subjects task here is to find a particular simple figure within a larger complex figure. The figures which make up the test were selected from those developed by Gottschaldt (1926) for his study of the role of past experiences in perception. To make Gottschaldt's black and white complex figures more
difficult, colored patterns were super-imposed. In Witkin's tests, 6 of Gottschaldt's simple figures and 24 of the complex figures were chosen. For each simple figure, there were several different complex figures that contained it. This test consisted of 24 trials, on each of which a different complex figure was employed. The time given for each trial was 5 minutes.

As this was considered rather cumbersome, Jackson (1956), based on split-half and odd-even high reliabilities, warranted a reduction in the length of the test - for EFT. He recommended a 12-item test, with 3 minutes as the time limit for each item, instead of the 5 minutes originally given. He reported a correlation in the mid 90's between the shortened and full scale for several groups of subjects. The items for this short form were selected after an item analysis. The following patterns from the original Witkin Tests, suggested by Jackson, were used in this study.

C-1, D-1, E-1, A-2, C-2, G-1, A-3, H-1,
E-3, C-3, D-2, and E-5.

Both the simple and complex figures are presented in the Appendix.
Reliability

Pande (1970), while trying out the test on a sample of Indian students has reported an odd-even reliability of .82 for college men and .79 for college women.

A test-retest reliability, was conducted by the investigator on a sample of 40 undergraduate students comprising of 20 boys and 20 girls. The time interval between the first and second administration was one week. The correlation coefficients for the two samples were,

\[ r = .85 \text{ for women } (n = 20) \]
\[ r = .86 \text{ for men } (n = 20) \]

Validity

Extensive studies on Field Dependence/Independence by Witkin et.al. (1962); Thurstone (1944), Gardner et.al. (1959); Gardner, Jackson and Messick (1960), indicate that the tendency toward a more field dependent or independent approach is a very general feature of an individuals functioning and is quite constant overtime.

Administration

In this study, the short form of the EPT was administered in an individual-administration setting
on a group of students. The test was administered with the help of other students who volunteered and the individual being tested was accommodated in as comfortable an environment as circumstances permitted. The number of trials given was 12, and each trial consisted of the presentation of one single and one complex figure in the following order,

C-1, D-1, E-1, A-2, C-2,
C-1, A-3, H-1, E-3, I-3,
D-2 and E-5

The procedure set forth by Witkin (1952) in administration of the test was strictly followed. On each trial, the subject was first presented the complex figure, then the appropriate simple figure, and finally, the complex one again, with instructions to locate the simple figure in it. The order of presentation was as mentioned above i.e., following a random sequence. The simple figure to be located was never the same in any two successive trials. On being shown the complex figure at the beginning of the trial, the subject never knew which simple figure it contained. The procedure of presenting the complex figure first and of using a different simple figure on each trial was intended to impress the total complex pattern upon the subjects, and to discourage the attitude of searching for a specific simple figure.
At the beginning of the test, the subject was given the following instructions — 'I am going to show you a series of colored designs. Each time I show you one of these designs, I want you to describe the overall pattern that you see in it. After you examine each design, I will show you a simple figure, which is contained in the larger design. You will then be given the larger design again, and your job will be to locate the smaller figure in it. Let us go through one to show you how it is done.'

The subject was then shown the practice complex figure (P-1) for 15 seconds, after which it was removed, and the practice simple figure (P) shown for 10 seconds. When it had been removed, the complex figure was presented once more with instructions to locate the simple figure in it. The subject was timed in this task, and the score recorded for him was the time taken to locate the simple figure. When he reported that he had found the figure, he was required to trace it, so that the examiner would be sure it was the correct one. After the practice trial, the subject was given the following additional instructions.

"This is how we will proceed on all the trials. I would like to add that, in every case, the smaller figure will be present in the larger design. It will always be in the upright position. There may be
several of the smaller figures in the same large design, but you are to look for only the one in the upright position. Work as quickly as possible, since I will be timing you, but be sure that the figure you find is exactly the same as the original figure both in size and in proportions. As soon as you have found the figure, tell me at once. If you ever forget what the small figure looks like, you may ask to see it again. Are there any question?" This presentation procedure was used on all the 12 trials.

Scoring

The subjects score on each trial was the time taken to find the simple figure. A maximum of three minutes was allowed, and if he failed to locate the figure within that time, his score was recorded as 3'(P) while the subject was searching for the simple figure, he/she was permitted to re-examine the copy of it as often as he wished. This was deemed necessary because the task would cease to be the one intended if the subject no longer remembered the structure of the figure for which he was searching. The complex figure was, of course, removed, so that both figures were never seen simultaneously, and the subject was discouraged from taking more than 10 seconds for each re-examination. The stop watch was stopped during the period of re-examination, so that this time was not included in the final score. The time at which the subject was shown the simple figure was recorded. When
the subject reported discovery of the simple figure within the complex one, the time was noted, but the stop watch was permitted to go on while he traced it. If this was done correctly, the score recorded for the trial was the time of discovery, but if the correct figure was not traced, the subject continued his search and the time consumed in tracing the incorrect figure was included in the final score. The time at which each unsuccessful attempt was made was recorded. The subject's score for the whole test was the sum of the time taken to locate the simple figure in all the 12 complex figures.

Description and Mode of Administration of Academic Satisfaction Scale

Studies by Peterson (1965), Stark et al. (1972), Netz et al. (1970), have all shown that student satisfaction is related to academic achievement, type of university and continuance/withdrawal plans. Peterson (1965) also reports that people identifying with different Clark-Thor Orientations experience varying degrees of satisfaction with college. Rand (1968), noted that significant association exist between student-environment fit and satisfaction. All these studies give some indication that student satisfaction is a result of and may be related to factors
of congruence/dissonance between individual needs and perception of environment.

An academic satisfaction scale was developed by the investigator based on Morstain's work (1977). The scale consists of 10 items relating to general academic satisfaction and each item is answered on a four point scale. The component items on the scale along with item scale score correlation are presented in Table 4.6.

Table 4.6: Showing the component items of Academic Satisfaction Scale andItem-Scale Score Correlations.

<table>
<thead>
<tr>
<th>Item</th>
<th>Correlations with Scale Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.72</td>
</tr>
<tr>
<td>2</td>
<td>.55</td>
</tr>
<tr>
<td>3</td>
<td>.67</td>
</tr>
<tr>
<td>4</td>
<td>.74</td>
</tr>
<tr>
<td>5</td>
<td>.57</td>
</tr>
<tr>
<td>6</td>
<td>.62</td>
</tr>
<tr>
<td>7</td>
<td>.75</td>
</tr>
<tr>
<td>8</td>
<td>.68</td>
</tr>
<tr>
<td>9</td>
<td>.68</td>
</tr>
<tr>
<td>10</td>
<td>.75</td>
</tr>
</tbody>
</table>

n = 50  p < .01 level when r = .354

*Description of items 1 to 10 of the above scales is given in Appendix.
The item scale score correlations as shown in the above table revealed a consistently high value for all the items on the scale. All the reported correlations were significant at the .01 level. The inclusion of all the items in the scale was thus justified.

**Scoring**

The scores range from 1 to 4 on each item and the total scores are summative over all the 10 items in the scale. Thus, the total score can range from 10 to 40.

**Administration**

The questionnaire is a very simple self-administering one. As the scale comprises of only 10 items, the total time taken for answering it is around 5 to 10 minutes.

**Reliability**

Temporal stability of the scale, tested on a sample of 40 students over a one-week interval was found to be $r = .88$

**The Sample under study**

Sample As this study was undertaken to establish whether students differed in the orientations they...
hold towards college, as well as in their perceptions of the Academic environment and also to check for the effect of discrepancy between these two on Academic Achievement, the sample was matched on the following factors.

1) The study was confined to the students studying in the final year undergraduate programme so as to match students on the basis of their having undergone, at the time of testing, an equal number of years at school and college.

It was also assumed that, being in the last year of college, changes in orientation, due to socialisation and other environmental factors, would already have taken place (extensive studies have shown that freshman attitudes, as well as environmental perception are highly idealistic when compared to those of their seniors) (Feldman & Newcomb, 1969, McConnel 1961, Adams, 1965, Lehmann & Dressel, 1963). The sample at this stage would therefore have developed a fairly stable orientation and would be in a situation to assess the academic environment in a more objective manner.

2) Only the college offering both Arts and Science courses were taken from the affiliated colleges of the Bangalore University. In terms of
enrolment and physical facilities offered, the colleges were similar and all of them were located within the city.

3) Though an attempt was also made to match the sample in terms of sex, and curricula, it was found that although the initial universe of selected colleges were all co-educational, the number of girls in these colleges far outnumbered the boys in both B.A. and B.Sc. courses and the number of students taking the B.Sc. course outnumbered those taking up the B.A. courses, among both boys and girls. So, two girls colleges were included in the study so as to make up a substantial sample. As the object of the study was to establish the presence of variations in Orientations Perception, the requirement was one of a respectable sample size, rather than one of matching. Variations in Orientation/Perception arising out of sex and curricular differences are also being examined.

Test Administration

The SOPO, along with the background information sheet and Cattell’s Culture Fair Test were administered to groups of students and useable, completed forms were collected from a total of 1102 students. This comprised of -

- 139 Boys from the Arts (BA) courses
- 261 Boys from the Science (BSc) Courses
- 290 Girls from the Arts Courses
- 392 Girls from the Science Courses

1102
The achievement scores of these students, on the previous two consecutive examinations were also collected.

As the EPT, the test for measuring Field dependent/Independent cognitive style required an individual administration setting, different students, randomly selected from the total sample under study were approached by the investigator and requested to take the test.

Usable data was collected from 240 students, made up of 120 boys and 120 girls. For this group of students, the academic satisfaction scale was also administered.

Data Analysis

1) For testing the hypothesis formulated in Chapter III, all the raw scores were initially converted into standard score values and all the calculations were made with standardised scores as these were considered better indicators of the quality of variables under analysis. Profiles were generated regarding 'Difference scores between Orientation and Perception, as well as Discrepancy Values among the following categories.'
(a) Total sample
(b) By sex—Boys/Girls
(c) By curricula—Arts/Science
(d) By Cognitive Style—Field dependence/Independence

2) 't' values were computed among these groups on all dimensions of Orientations/Perceptions to establish the significance of variations in the expressed orientations and perceived environment of students.

3) Correlation and partial correlations were computed between the discrepancy variations on all dimensions and the criterion variable, academic achievement, to check for the relationship of discrepancy with performance. Correlations were also computed between the dimensions of discrepancy and Academic satisfaction of students.

The results are discussed in the following Chapter.