CHAPTER TWO

METHOD AND PROCEDURE
The purpose of this chapter i.e. Method and Procedure was to describe how the present research was carried out. This chapter is critical for demonstrating that investigator has developed a clear, organized and thoughtful research design. It includes following essential elements:

- Design of the study
- Details related to selection of sample and specific sampling technique
- Describe tools and techniques
- Details of how data was collected
- Required statistical techniques

Keeping in view the above mentioned criteria, the contents of this chapter include the design of the study, sample of the study, tools used, sampling and statistical techniques employed.

DESIGN OF THE STUDY

To design is to plan, that is, designing is a process of deliberate anticipation directed towards bringing an expected situation under control. It is an arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure.

All research involves the elements of observation, description, and the analysis of what happens under certain circumstances (Best, 1963).

The present study was designed to find the relationship of Career decision-making with Locus of control, Self esteem, Career choice anxiety and Academic achievement of undergraduates. The method of investigation used, was descriptive, survey coupled with the techniques of comparison and bivariate and multivariate correlations between the groups.

According to Best (1981), a descriptive study describes and interprets "what is". It is concerned with conditions or relationships that exists, opinions that are held, processes that are going on, effect that are evident or trends that are developing. It is primarily concerned with the present although it often considers past events and influence as they relate to current conditions. In
other words, descriptive research studies are designed to obtain precise information concerning the current status of phenomena and whenever possible to draw general conclusions from the facts discovered.

Descriptive research is designed to describe the characteristics or behaviours of a particular population in a systematic and accurate fashion. It is a general term to describe a research project that does not manipulate variables and does not try to establish casual relationship between events. Descriptive research also known as statistical research describes data and characteristics about population or phenomena being studied. Descriptive research answers the questions who, what, when and how. It involves collecting numerical data to test hypotheses or answer questions concerning current status.

Best (1992) describes that survey method gathers data from a relatively large numbers of cases at particular time. It is not concerned with the characteristics of individuals as individuals. It is concerned with the generalized statistics that results when data are abstracted from a number of individual cases. It is essentially cross-sectional in nature. It involves a clearly defined problem and definite objectives. It requires expert and imaginative planning, careful analysis and interpretation of the data gathered and logical and skilful reporting of the findings. In other words, survey studies are conducted to collect detailed description of existing phenomena with the purpose of employing data to justify current conditions and practices or to make more intelligent plans for improving them.

Smith and Glass (1987) state that the fundamental purpose of descriptive survey research is to describe the characteristics of variables in population by directly examining samples.

Thus the present study is descriptive in the sense that it aims at exploring the nature and distribution of variables. As such it describes the nature of Career decision-making, Locus of control, Self esteem, Career choice anxiety and Academic achievement of undergraduates.

This study is a survey, as it has definite objectives of analysis and interpretation of the data gathered and skilful reporting of the findings.
The study involves the comparison of Undergraduates on the variables of Career decision-making, gender wise i.e. boys / girls, Locus of control, Self esteem, Career choice anxiety and Academic achievement.

The study is also co-relational in approach. It aims at correlating the dependent variables of Career decision making with the independent variables of Locus of control, Self esteem, Career choice anxiety and Academic achievement.

To find the correlates and predictors of criterion variable of Career decision-making at undergraduate level from among the predictor variables of Locus of control, Self esteem, Career choice anxiety and Academic achievement, multivariate regression analysis was used.

FIELD OF INVESTIGATION

The field of investigation was the degree colleges in the state of Punjab in North India. In all, there are 45 Government, 121 Aided and 66 Unaided Degree colleges in Punjab. These, 232 Degree colleges affiliated under three Universities of Punjab viz. Panjab University, Chandigarh (N=284), Punjabi University, Patiala (N=147) and Guru Nanak Dev University, Amritsar (N=206) comprised the field of investigation. (The list of all these colleges is attached hereby, vide Appendix I). A total of six colleges were selected randomly from this list.

Criteria of Selection of Colleges

In order to give due representation, atleast two degree colleges under each University i.e. Panjab University, Chandigarh, Punjabi University, Patiala and Guru Nanak Dev University, Amritsar were selected randomly from the list of colleges. Hence, a total of six degree colleges were identified to collect sample from. At the same time, care was taken that only those degree colleges are selected which offered B.A.; B.Sc. (Medical), B.Sc. (Non-Medical) and B.Com courses.
Criteria of Selection of Students

Following criteria was kept in mind while selecting students for the study.

- First year Undergraduate students pursuing courses in Arts, Commerce, Medical and Non-Medical streams.
- Only those students who were present on the days of data collection sessions (two) and also completed all the tests.

SAMPLING PROCEDURE

The primary purpose of the research is to discover principles that have universal application. But to study the whole population in order to arrive at generalization would be impracticable, if not impossible. The process of sampling makes it possible to draw valid inferences or generalizations on the bases of careful observations of variables within relatively small portion of the population.

According to Best (1981), a sample is a small section or proportion of a population selected for observation and analysis which represents all the traits and characteristics of the population.

Almost all the research studies in education may be termed sample studies, as data are usually collected from parts of the whole population for which the problem is being investigated. Every research worker, therefore has to resort to sampling.

The technique adopted for the sampling in the present study was multistage sampling as well as incidental in nature.

In multistage sampling the material to be sampled is regarded as composed of number of first stage sampling units, each of which is made up of a number of second stage sampling units, and so on, until we reach the ultimate sampling unit in which we are interested. At the first stage, sampling units are suitably selected. Thus, instead of enumerating all sampling units in the selected cluster one can think of obtaining better and more efficient estimators by concentrating on sub-sampling within the cluster. In this type of sampling, the researcher divides the population into strata, samples the strata, then stratifies the samples, and then resamples, repeating the process until the ultimate sampling units are selected at the last of the hierarchical
levels. In general, it refers to a sampling technique which is carried out in various stages with population as primary units in the first stage.

Multistage sampling is more flexible. It enables existing divisions and sub-divisions of the material to be taken as sampling units at different stages. The construction of a second stage frame is meant only for these units which are selected in the first stage sampling and this obviously leads to a great saving in operation cost.

Multi-stage sampling is used in large scale surveys for a more comprehensive investigation. The researcher may have to use two, three or four stage sampling. Multi-stage sampling is comparatively convenient, less time-consuming and less expensive method of sampling. However, an element of sample bias gets introduced because of the unequal size of some of the selected sub-samples. This method is recommended only when it would be impracticable to draw a simple random sample.

The sampling was also incidental in nature as only those students who were present on the days of data collection sessions and also completed all the tests. In the present study, the sample thus consisted of 637 students studying in the Government aided and Government colleges of state of Punjab under Panjab University, Chandigarh, Punjabi University, Patiala and Guru Nanak Dev University, Amritsar. The representativeness of the sample was ensured with respect to class and availability of Art, Science and Commerce streams. The list of colleges is presented vide table 2.1.

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Name of College</th>
<th>University</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Government College, Hoshiarpur</td>
<td>Panjab University, Chandigarh</td>
</tr>
<tr>
<td>2.</td>
<td>Government College, Muktsar</td>
<td>Panjab University, Chandigarh</td>
</tr>
<tr>
<td>3.</td>
<td>Government Mohindra College, Patiala</td>
<td>Punjabi University, Patiala</td>
</tr>
<tr>
<td>4.</td>
<td>Government College, Mohali</td>
<td>Punjabi University, Patiala</td>
</tr>
<tr>
<td>5.</td>
<td>Kanya Maha Vidyalaya, Jalandhar</td>
<td>Guru Nanak Dev University, Amritsar</td>
</tr>
<tr>
<td>6.</td>
<td>D.A.V. College, Amritsar</td>
<td>Guru Nanak Dev University, Amritsar</td>
</tr>
</tbody>
</table>
The detailed college-wise break-up of the total sample is presented vide table 2.2.

Table 2.2

Detailed College-wise Break-Up of the Total Sample

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Name of college</th>
<th>Class</th>
<th>No. of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Govt. College, Hoshiarpur</td>
<td>B.A-I</td>
<td>55</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B.Com I</td>
<td>55</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B.Sc.-I (Med)</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B.Sc. -I (N Med)</td>
<td>45</td>
</tr>
<tr>
<td>2.</td>
<td>Govt. College, Muktsar</td>
<td>B.A-I</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B.Com I</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B.Sc.-I (Med)</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B.Sc. -I (N Med)</td>
<td>18</td>
</tr>
<tr>
<td>3.</td>
<td>Govt. College, Patiala</td>
<td>B.A-I</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B.Com I</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B.Sc.-I (Med)</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B.Sc. -I (N Med)</td>
<td>10</td>
</tr>
<tr>
<td>4.</td>
<td>Govt. College, Mohali</td>
<td>B.A-I</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B.Com I</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B.Sc.-I (Med)</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B.Sc. -I (N Med)</td>
<td>18</td>
</tr>
<tr>
<td>5.</td>
<td>K.M.V., Jalandhar</td>
<td>B.A-I</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B.Com I</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B.Sc.-I (Med)</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B.Sc. -I (N Med)</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B.Com I</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B.Sc.-I (Med)</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B.Sc. -I (N Med)</td>
<td>22</td>
</tr>
</tbody>
</table>
The break-up of total sample on the basis of gender, in different groups of Arts, Commerce, Medical and Non-Medical, is presented vide Table 2.3

Table 2.3

Subject-wise and Gender-wise Break-Up of Total Sample

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Subjects</th>
<th>Boys</th>
<th>Girls</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Arts</td>
<td>92</td>
<td>95</td>
<td>187</td>
</tr>
<tr>
<td>2.</td>
<td>Commerce</td>
<td>75</td>
<td>80</td>
<td>155</td>
</tr>
<tr>
<td>3.</td>
<td>Medical</td>
<td>64</td>
<td>71</td>
<td>135</td>
</tr>
<tr>
<td>4.</td>
<td>Non-Medical</td>
<td>74</td>
<td>86</td>
<td>160</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>305</td>
<td>332</td>
<td>637</td>
</tr>
</tbody>
</table>

TOOLS USED

Following tools were used to collect the data for the present study:

- Career Decision – Making: Singh’s Career decision-making Inventory (Kirandeep Singh, 1999)
- Locus of control: Levenson’s Locus of control (Vohra, 1992)
- Self esteem: Self esteem Inventory (Cooper Smith, 1981)
- Career choice anxiety: State Trait Anxiety Inventory (Speilberger, 1983)
- Academic achievement of the students was measured by their scores in the last examination 10+2 i.e. class XII examination.
DESCRIPTION OF THE TOOLS

Singh’s Career decision-making Inventory (1999)

The Career decision-making inventory was used in the present study to measure the Career decision making of undergraduates. It consists of career decidedness scales and career indecision scale. The inventory consists of 18 items, 5 for decidedness scale and 13 for indecision scale. The test times are printed in a reusable booklet designed to be used with a separate answer sheet. Respondents are asked to circle the three options i.e. exactly like me, somewhat like me, and not at all like me on the basis of how closely the items describe them.

Reliability

The test retest reliability coefficients for career decidedness scale and career indecision scale were found to be .97 and .94 respectively.

Validity

The criterion related with career decision scale (Osipow, 1986) yielded significant coefficients of correlation of .69 and .59 for career decidedness scale and career indecision scale respectively.

Norms

Grade wise and sex wise percentile norms to categorize the students as either decided, tentative or undecided are prepared on scores obtained on a sample of 637 first year undergraduate students (boys and girls) studying in different colleges of state of Punjab. The norms are given separately for boys and girls.

Levenson’s Locus of control (Vohra, 1992)

This scale is used to measure the Locus of control of undergraduates. It is likert type scale, with multiple choice responses presented in a continuum Responses range from strongly agree, Agree, Undecided, Disagree to strongly disagree. In this five point scale the responses are given weight from 1 to 5 as shown below:
5 Strongly Agree
4 Agree
3 Undecided
2 Disagree
1 Strongly Disagree

The scale consists of 24 statements, 8 each for P-Powerful others, C-Chance Control, and I-Individual Control. The statements are presented in a random order as follows:

Statements 3, 8, 11, 13, 15, 17, 20, 22 for P-Powerful others
Statements 2, 6, 7, 10, 12, 14, 16, 24 for C-Chance Control
Statements 1, 4, 5, 9, 18, 19, 21, 23 for I-Individual Control

Reliability

The test-retest reliability was calculated for the present scale, with N=200, retested after one week's time. The test retest reliability coefficient was found to be 0.76, by calculating coefficient of correlation between two sets of scores of the same individuals on the same scale, after one week's time.

Validity

The present scale shows fairly high reliability. From the viewpoint of applied psychology, every test must have predictive validity. This is possible only when the reliability coefficient of the test is high. Apart from the high reliability and predictive validity, the present scale was also validated against the Rotter's Locus of control Scale i.e. the concurrent validity was also established. The present scale is a five point Likert type scale where the subject has to show extent of his agreement or disagreement with the statement related to either P (powerful others), C (chance control) or I (individual control).

Scoring

This test is a five point Likert type scale which is to be hand scored with a stencil key which is placed on the test booklet and the answer appear as pencil or pen marks in the boxes on the given test booklet. The marks on the test booklet are visible through the circle for each factor, as indicated by the number printed above the circle. Add these scores separately for all three
Factors (P, C, and I) and write the total in the space provided at the back page of the test booklet. Also please read carefully the instruction printed on the scoring key stencil before using it.

Norms

In many research applications the examiner will have no need to convert the raw score obtained with the scoring key stencil to sten score. However, commonly the test user would like to know how an individual stands in relation to a defined population. For this purpose the raw score should be converted into sten score. The sten scores are distributed over ten equal intervals of standard scores point from 1 to 10. These sten scores can then be plotted on the profile sheet for comparison purpose, given at the back of the test booklet. The score of 5-6 devote average strength of the factor. Score above 6 i.e. from 7-10, express gradually the greater strength of the factor and scores below 5, i.e. from 1-4, indicate gradual decrease of strength. Apart from the sten scores, the percentile ranks are also given for Powerful others, Chance control and Individual control.

Self Esteem Inventory (Cooper Smith, 1981)

The Self esteem inventory (SEI) is designed to measure the evaluative attitude towards self in social, academic, family and personal areas of experience.

Administration

The SEI may be administered to group or individuals. The Adult Form is used with persons aged sixteen and above. Administration time rarely exceeds ten minutes.

The adult Form is usually self-administered. Questions should be discouraged once the examinees have begun working. Clarification of word meanings may be necessary, but caution should be taken not to influence an examinee's responses. If the items are being read aloud, be sure to avoid making any statement seem inherently positive or negative.

Once the inventories have been completed and they are being collected, check to make sure the identifying information has been completed.
**Scoring**

The SEI can be scored in a few minutes by using the scoring keys for the form that has been administered. It is strongly recommended that the scoring keys be used since they greatly reduce time, if scoring key is not available, the general rules listed below should be followed when scoring the self-esteem items.

- Score negative items correct (for example, “I get upset easily at home”) if they have been answered “unlike me”.
- Score positive items correct (for example, “I’m pretty sure of my self”) if they have been answered “like me”)

**Interpretation**

For the SEI, high scores correspond to high self-esteem. In most studies, the distributions of SEI scores have been skewed in the direction of high self-esteem (negatively skewed). The means have generally been in the range of from 70 to 80 with a standard deviation of from 11 to 13. Scores on the SEI have been shown to increase slightly and monotonically with grade level.

Employing position in the group as an index of relative self-appraisal, the upper quartile generally can be considered indicative of high self-esteem, the lower quartile generally as indicative of low self-esteem and the interquartile range generally as indicative of medium self-esteem.

**Norms**

The Adult Form of the SEI was administered to 226 college students who attended either a community College or a state university in Northern California. The mean age of these students was 21.5 years with a standard deviation of 3.5 and a range of 16 to 34 years.

**State Trait Anxiety Inventory (Speilberger, 1983)**

The state trait anxiety Inventory (STAI) has been used extensively in research and clinical practice. In the present study, Career choice anxiety was measured by a modification of the State Anxiety Scale of State-Trait Inventory (STAI), Form Y (Spielberger, Gorsuch, & Lushene, 1983). The modification asked respondents “to indicate how you feel right now, that is, at the moment
when you think about being decided or undecided about your career”. The Trait Anxiety scale was not used in the present study. The scale contains 20 positive and negative feeling items that one rates as self-descriptive or not on a 4-point scale that ranges from not at all (1) to very much so (4). After recording negative items, high scores equal higher Career choice anxiety.

Scoring

Each State Anxiety item is given a weighted score of 1 to 4. A rating of 4 indicates the presence of a high level of anxiety for ten S-Anxiety items. The scoring weights for the anxiety present items are the same as blanched numbers on the test form. The scoring weights for the anxiety absent items are reversed i.e. responses marked 1, 2, 3 or 4 are scored 4, 3, 2, 1 respectively. The anxiety absent items for which the scoring weights are reversed on the S-Anxiety:

S-Anxiety – 1,2,5,8,10,11,15,16,19,20

Norms

Normative data for forms Y are available for working adults, college students, high school students and military recruits.

Reliability

Fuqua and Hartman (1983) and O’Hare and Tamburri (1986) used a similar modifications of the scale in their studies of college students. The manual reports alpha coefficients ranging from .91 to .93 for six samples of adults.

Validity

There is significant coefficient of correlation between S-anxiety and T-anxiety scale for high school student which comes out to be 96 and 93 for boys and girls respectively.

Academic achievement

Academic achievement of the students was measured by their scores in the last examination 10+2 i.e. class XII examination.
ADMINISTRATION OF TESTS AND DATA COLLECTION

The data for the present study were collected personally by the investigator herself. The students were approached through the heads of the institutions. The permission of the concerned head of the institution was sought and timings were fixed with the principal and teachers-in-charge as well.

As the tests were lengthy, it was not possible to administer all of them together. Therefore, the tests were administered in two sessions, spread over a period of two to three days in each college.

In the first session Singh’s Career decision-making Inventory and Levenson’s Locus of control were administered. This was followed by Self-esteem Inventory and State Trait Anxiety Inventory in the second session.

The purpose of the visit was explained to the students. They were also assured that the information received from them would be used only for research purpose. All possible efforts were made to make the students feel at ease. After establishing a good rapport, the respondents were given booklets and answer sheets, the instructions were read aloud and explained to the students, as per manual for each test.

The investigator was present there all the time to answer the queries, to satisfy the curiosity of respondents and to motivate them to answer the questionnaires carefully. All efforts were made to ensure maximum cooperation of the students. After completing one test, the answer sheets and booklets were collected and the next test was given to the students with sufficient gap. Similarly, all the tests were completed.

The tests were administered on 637 students, who completed all the tests.

SCORING PROCEDURE

The data collected with the help of various tools viz: Singh’s Career decision-making Inventory, Levenson’s Locus of control, Self esteem Inventory by Cooper Smith and State Trait Anxiety Inventory by Charles D.
Spielberger were scored strictly according to the directions for scoring given in their respective manuals.

STATISTICAL TECHNIQUES EMPLOYED

In accordance with the various objectives of the study, different statistical techniques had to be employed to analyze the data at different stages of investigation, viz:

Descriptive Analysis

Measures of Central tendency such as means, standard deviations, standard errors, skewness and kurtosis were worked out to study the nature and distribution of variables.

Differential Analysis

The T-test was employed:

i) To find the number of students in the decided, Tentative and Undecided categories;

ii) To compare Decided and Tentative students on the variables of Career decision making, Locus of control, Self esteem, Career choice anxiety and Academic achievement.

Bivariate Analysis

The product-moment coefficients of correlations were worked out to obtain the nature and extent of relationship between Career decision-making, Locus of control, Self esteem, Career choice anxiety and Academic achievement of the undergraduates.

Multivariate Analysis

Stepwise multiple correlations and multiple regression co-efficients’ were computed in order to find the predictors of Career decision-making from among the independent variables of Locus of control, Self esteem, Career choice anxiety and Academic achievement.

Thus with the help of above mentioned statistical analyses, the investigator could draw conclusions testing various hypotheses.
PROCESSING OF DATA

The raw data were statistically treated and processed on IBM Pentium II computer installed in the Department of Computer Sciences and Applications, Panjab University, Chandigarh. The data were processed using SPSS 11.5 version (Statistical Product Service Solutions, formerly known as Statistical Package for Social Sciences).