C H A P T E R VIII

MAIN INVESTIGATION

The objective of the main enquiry was to test the main hypotheses around the interest patterns and their relationship to environmental factors. This study thus, demanded a very careful planning and designing so as to fit both the psychological and environmental data in proper folds.

As mentioned in the previous chapter, the hypotheses were formulated and tests validated for the purpose of verifying them. It would, therefore, be proper to outline the main experiment in the present chapter and report the details under the following heads:

(a) Sample,

(b) Tests and techniques,

(c) Statistical methods for analysis,

(d) Collection of data and observations.

The hypotheses have already been formulated in chapter V and the other phases of the investigation will, therefore, be reported in the present chapter.

Sample

The sample which consisted of a wide section of undergraduate students in different courses of study was drawn from all the socio-economic strata in respect of physical environment and social climate . It was indeed a problem to get a fully representative sample covering all the sections under study. As a matter of fact, two basic methodological problems arise in studying the effects of any environmental experience. The first is the lack of useful techniques for assessing the environment. The second and perhaps the more serious is that people are not distributed at random among various environmental stimulations. This presented a typical issue in the form of getting an equal proportion of cases belonging to each cell under the table for analysis of variance. With a view to having at least a representative sample, the following points were kept in view:

(a) The age-range would be more or less uniform.

(b) Different courses of study would be represented.

(c) Different physical environments would be taken into account while selecting the

institutes for collection of data. It was expected that the sample thus, drawn from various institutes would be randomly distributed, in terms of family traditions, socio-economic strata, etc.

(d) The number of subjects in each of the six institutes came to 50. Thus, the total number of the subjects representing both the sexes was 300.

Sociologically, the entire population could roughly be classified under the following categories:

(1) Urban

(a) Urban Industrial,
(b) Urban Commercial,
(c) Urban Residential.

(2) Rural

(a) Rural Residential,
(b) Rural Agricultural.

The courses which were taken into consideration for finding their effect on interest development

are as follows:

(a) Fine Arts,
(b) Technical,
(c) Commerce,
(d) Agriculture,
(e) Humanities,
(f) Science.

The variables selected for treatment included besides 'area' and 'stream' are father's occupation, family tradition and parental desire. Unfortunately, the sample could not be drawn before hand to make sure that each section of all the following categories would be represented by equal number of cases:

(1) Father's Occupation

(a) Fine Arts,
(b) Technical,
(c) Commerce,
(d) Agriculture,
(e) Humanities,
(f) Science.

(2) Family Tradition

(a) Fine Arts,

(b) Technical,

(c) Commerce,

(d) Agriculture,

(e) Humanities,

(f) Science.

(3) Parental Desire

(a) Fine Arts,

(b) Technical,

(c) Commerce,

(d) Agriculture,

(e) Humanities,

(f) Science.

It was, however, expected that at least each section of the above categories would be represented by cases more than one.

With a view to getting a fairly representative sample drawn from the areas mentioned above, the following institutions were selected:

(1) Faculty of Fine Arts, Baroda,

(2) Institute of Technology, Baroda,

(3) Faculty of Science, Baroda,

(4) Institute of Agriculture, Anand,

(5) H. L. College of Commerce, Ahmedabad,

(6) L. D. Arts College, Ahmedabad.

The institutions located in Baroda and Anand have already been described in the previous chapter to reflect upon the composition of the sample drawn from mainly urban residential and rural (residential and agricultural) areas respectively.

(5) H.L.College of Commerce, Ahmedabad, and

(6) L.D.Arts College, Ahmedabad.

Both the institutions have a nice campus and occupy one of the busy areas of the town. Most of the students have to come from areas including industrial and commercial centres. The staff members of the institutes were highly co-operative. The institutes provide different courses, so as to cater to the needs of the locality.

(b) Tests and Techniques

The tests and techniques employed in the main investigation are not different from what have been employed in the pilot study. As already mentioned, the

tools and techniques have been improved for use in the main investigation and the general arrangement had been revised in the light of the experience derived from pilot study. In short, the tests employed in the main study may be classified under the following heads:

(a) Subjective

Sub-test No. 1 - Interest Inventory.

(b) Objective

(i) Situational test (Sub-test No. 4 - News Items).

(ii) Information Test (Sub-test No. 3).

(c) Projective

(i) "How much how many" test (Sub-test No.2).

In fact, the value of the tests is determined by the purpose they serve and also by their efficacy in differentiation.

In the present investigation, the value of the inventory has been recognized because of the reported efficacy of this technique inspite of the fact that it is a highly traditional approach. The importance of

an inventory could hardly be overlooked. It was also felt that no single instrument would measure interest adequately. This is one of the reasons why some objective test of interest was also added. It was expected that they would compensate against the weakness of the inventory.

Information test is, of course, an indirect measure, for studying interest as it may assess one's knowledge of the environment as well. Yet the validity of this measure is acknowledged. The effect of the second factor i.e. ability factor could be partialled out with a view to evaluating the extent to which interest is measured by this technique. The soundness of the approach may be questioned but one can also support this by pointing out that human beings tend to be selective in absorbing and even retaining experience in the form of information. The selective process is mainly determined by one's ego-involvement which may be described as interest.

The addition of another type of objective test in the form of situational test has also been prompted by the consideration that the approach would be more realistic. One's interest finds its expression not only through one's verbal preferences or the

amount of information one keeps in a particular field but also through the materials one selects for reading. One's preferences in reading materials sufficiently indicate one's relative standing on various fields of interest. Although, unconventional, this type of situational test has its possibilities.

In recent years, efforts have been made to increase a number of objective devices for the assessment of interest and motivation. A few projective techniques have been tried out like the one used in the present investigation (sub-test No. 2). It is not quite certain that this approach would be very much acceptable to the conservative minds. Yet one cannot deny that projective techniques have shown promise and have definitely the advantage of tapping the unconscious mind by bringing out the affective components of interest. The test battery, in short, was so composed as to include various types of tests for interest assessment from various angles.

Test Administration and Scoring

The procedure of test-administration remained almost the same except that the order of the tests presented one after another was changed. The purpose

was to economise time by presenting it as a single "Test-Battery" and giving the overall directions at a time.

Scoring

The principle of scoring adopted in the pilot study was kept in tact even ~~x~~ in the main investigation. The weightage in the case of the projective test had to be reduced so as to bring uniformity in the range of scores on each subtest.

Readministration of the Test-Battery for Finding its Reliability

Any test-battery has to meet two main criteria before it can be profitably used. The criteria are reliability and validity. With a view to finding out the reliability, quite a number of methods has been suggested and each has its advantage and disadvantage. In the present investigation, the test retest reliability has been found more appropriate in view of the fact that this is really difficult to split each sub-test into two halves on a scientific bases. Hence, it was necessary to administer the test second time on the sample which could be made available on both the occasions. A time interval of a

fortnight was kept between the two administrations of the test-battery for minimising the influence of practice and memory on the second performance.

(c) Statistical Methods for Analysis

The arrangement of the data demands skill and specific design so as to allow further treatment and analysis. In the present investigation the task involved is manifold but the main purpose of the statistical analysis is to test the hypotheses and interpret the data in all possible ways. The primary task has been to determine the nature of distribution of scores derived by means of tests constructed for the purpose. As mentioned earlier, the purpose of the pilot study was to attempt the validation of the instruments and make observations on the nature of the distribution, range, mean and standard deviation of the interest scores. After the tests have been validated and some preliminary observations made on the sample, the central tendency and deviations of the scores, the next step was to test the hypotheses one by one by means of suitable statistical methods. As regards the distribution of the scores derived from the main investigation, the frequency tables have been used both groupwise and interest-wise and the mean, standard

have been
deviations calculated for reflecting upon the patterns and manifestations of interest. In other words, the purpose of finding out the range, central tendency and the deviation of this scores was to find out whether interest has specific manifestations in respect of each group following a particular course of study. On a study of all the distributions of the score, it would be possible to have a rough view as to whether interest vary from group to group. This procedure would help to test partly the hypothesis that interest patterns are identifiable in respect of a number of dimensions. It may be that the dominant interest when judged in relation to other interests of the same group would reflect variations in terms of the different patterns of interest. Although the distribution, range and central tendency of the interest scores would serve the preliminary purpose of testing the first hypothesis, it has been also felt necessary to employ further statistical methods for analysis of the patterns of interest. In consideration of the various limitations of the simple methods of frequency analysis or even those of mean and Standard Deviation for such a purpose, factor analysis has been regarded as the most suitable method for studying the basic patterns of interest. The study of intercorrelations between various

interest areas would also help to reflect upon the overlap between various interest areas. Thus, the patterns of interest would be very clearly observed after the intercorrelations between interest scores of each group in various interest areas have been studied and factors extracted from each correlation matrix. This would lead to the verification of the hypothesis No. 2. As regards the procedure for testing the hypothesis No. 3, it has been felt that it is indeed difficult to collect the uniform number of cases for each of the categories designed in our investigation. The ideal condition would have been, however, to collect the environmental data on a huge sample for ensuring a satisfactory uniformity in respect of number of cases for each cell and then to obtain the interest scores of that sample fixed up according to the needs of the environmental data. This is rather extremely difficult and perhaps impractical as there is no guarantee as to what size of the sample would provide that satisfactory number of cases in each cell. Thus, for the sake of economy of time in every respect, a random sample was taken and the environmental data were collected along with the data on interest. It is, however, ensured that minimum number of cases required for each cell is there and then the data tabulated

according to specific designs for the analysis of variance. As mentioned elsewhere, it is extremely difficult to evaluate environment quantitatively and that is why the environment had to be assessed on qualitative bases in respect of each category with a view to permitting analysis of variance. There were five environmental variables and six interest areas and the task was to relate the interest scores to the various environmental factors. It is quite likely that some interactions would be there between the environmental factors. With a view to accounting for the interaction effect, the 1 x 1 factorial design of the analysis of variance was employed. It was found convenient to employ 1 x 1 factorial design so as to permit effective operations without making the design unwieldy.

(d) Collection of Data and Observations

The test-battery was originally administered on a sample of three hundred undergraduate students drawn from various environments and socio-economic strata. For the sake of convenience raw data have been furnished in the Appendix.

It would be observed from Table III that

the Range, Mean and Standard Deviation of the entire sample used in the main investigation vary to a considerable extent from one area of interest to another. As regards Range this is maximum in the case of Fine Arts interest, viz., 3.0 - 43.6 and minimum in the case of Science, viz., 6.2 - 38.2. The Mean interest score in Science interest is greater than that in the other areas of interest while the Mean is the minimum in the case of Commerce interest. This hints at the possibility of the existence of a number of interest areas reflecting variations according to individual differences.

The Table IV in the Appendix B presents in a nut-shell the Range, Mean and Standard Deviation of interest scores in all the six areas obtained by each group of 50 subjects, viz., Fine Arts, Technical, Commerce, Agriculture, Humanities and Science. It would be observed from each group of Means that the specialist group has the highest Mean in the respective field of interest. As regards S.D. the same picture is reflected throughout. It is also interesting to observe certain trends in the Mean scores obtained by each group. It appears that the Fine Arts group tends to have higher means in Humanities interest than in any of the remaining

four areas of interest. Similarly, the Technical group has a higher Mean in Science than those particularly in Fine Arts and Commerce. In the Science group the Mean score in Science interest is of course, the highest and the next highest score is in the Agricultural interest. All these suggest a possible overlap between areas of interest.

As the purpose of the investigation has been to relate interest to environmental factors, it has been considered worthwhile to classify environmental factor under a few categories and tabulate the distribution of sample under them. This would help the investigator to know the nature of the distribution as well as the number of entries in each cell before the analysis of variance is taken up. A few tables showing the distribution of the sample according to the environmental categories formulated, are presented for preliminary observations on the possible effect of environmental factors on interest. Two environmental variables have been taken into account in each table as follows:

F. O. x Area

F. O.

Area	F	T	C	A	H	Sc
U. I.	2	15	17	2	7	5
U. C.	2	3	28	2	10	2
U. R.	7	12	30	4	13	6
R. A.	2	5	20	63	5	2
R. R.	2	2	12	8	10	2

It is observed from the above Table that the number of entries is maximum, where the "father's occupation" is agriculture and where the "area of residence" is rural agricultural. This points out the selectivity although accidental in the distribution of the sample by virtue of an inherent relationship between the "father's occupation" as an agriculturist and their area of residence in a village abounding in cultivation and farming. This may, however, mean that the area of residence is one of the determinants of the occupation or ~~the~~ vice versa. Similarly, quite a large number of entries in the cell, corresponding to "father's occupation" in Commerce and their residence in "urban commercial area" reflect almost the same fact that there is a relationship between one's area of residence and the

profession one chooses. This also suggests a possibility of interaction between these two variables viz., father's occupation and area of residence.

F. T. x P. D.

P. D.	F. T. F	T	C	A	H	Sc
F	7	8	8	9	9	2
T	2	20	19	15	6	2
C	2	6	33	10	7	2
A	2	2	3	26	2	2
H	2	3	14	10	8	2
Sc	2	14	19	10	5	7

From the above table, it is apparent that the "family tradition" has some influence on the "parental desire". This is particularly observable from a large number of entries in the cell where the family tradition corresponds to the respective parental desire. For example, in a cell where Commerce is a family tradition, the parental desire tends to be higher in the same field than in any other field. Similar is the case where Agriculture is the family tradition with corresponding parental desire for the same course or vocation.

F. T. x Stream

Stream	F. T. F	T	C	A	H	Sc
F	7	8	14	11	8	2
T	2	17	16	9	3	3
C	2	7	26	6	7	2
A	2	4	4	34	3	3
H	2	7	18	14	7	2
Sc	2	10	18	6	9	5

It is interesting to observe from the Table that the number of entries in most of the cells coming under the column Commerce as the family tradition is relatively higher than others. For example, the number of entries under Commerce as a family tradition with corresponding stream of Fine Arts is 14, which is the maximum in the entire row. Apparently, it is difficult to explain how students with commercial family tradition have taken up Fine Arts as a course of study. The same curiosity might persist in the case of entries with the corresponding streams, viz., Technical, Humanities and Science. In the case of Commerce both as 'family tradition' as

well as 'stream' the number of entries is 26 which is greater than others. This is, however, understandable as Commerce as a family tradition may be related to one's choice of Commerce as a course. In other cases it is not very clear as to what are the considerations behind. It may be that the students with family tradition of Commerce have greater opportunities in encouragement to venture in other pursuits except that already followed by their family. In case of the cell under Agriculture as a family tradition with corresponding course,viz., Agriculture, the number of cases are strikingly high as in other tables bespeaking its dominance as a vocation in Rural Gujarat and its relationship with one's choice of a course of study.

Reliability and Validity of Tests

It is an important step before using an instrument to find out its reliability and validity. As mentioned elsewhere, the test retest reliability has been found out for the entire test-battery as well as for each subtest. The following Table presents the reliability co-efficients.

Showing Test-Retest Reliability

Interest area	ST1	ST2	ST3	ST4	Total test -Battery
Fine Arts	.908	.576	.915	.785	.935
Technical	.942	.636	.770	.605	.917
Commerce	.894	.721	.879	.534	.901
Agriculture	.907	.653	.843	.659	.912
Humanities	.833	.599	.813	.290	.824
Science	.807	.623	.810	.458	.830

From the above table, it is observed that subtest 1 has a consistently higher reliability coefficient than that of the rest. In case of subtest 3, the reliability coefficient is also uniformly high in all the cases while that in the case of subtest 2 it is not so uniform. The reliability coefficient of this subtest varies considerably from area to area and it ranges from +.58 to +.72. In case of subtest 4 however, the picture is still unsatisfactory as the variations are larger from area to area. The reasons of this fluctuation might be attributed to the difference in the levels of motivation on both the occasions partly caused by the length of the subtest.

Inspite of the variations in the reliability

co-efficients of each subtest the reliability of the entire test-battery is significantly high and in no case lower than +.83. This justifies the use of the test-battery as a whole in the main investigation.

As regards validity,the following Table presents the loadings of the first factor on each subtest.

Interest	ST1	ST2	ST3	ST4
Fine Arts	.900	.817	.893	.793
Technical	.829	.762	.815	.712
Commerce	.938	.538	.865	.744
Agriculture	.886	.755	.836	.801
Humanities	.897	.811	.724	.683
Science	.880	.754	.805	.697

The first factor which is identifiable as the respective factor of interest has its high loadings on each of the sub-test. Apart from the item analysis employed for validation of each item, the factorial validity has been obtained in the absence of any dependable external criteria. In no case the first factor loading is less than +.68, although, the range of variation is wide viz., from +.683 to +.938.

As regards the patterns of interest are concerned it would be seen from the following Table that quite a number of factors emerges out of the analysis having various degrees of contribution to the total variance.

Contribution of Each Factor to the Total Variance in Terms of Percentage

	Groups					
Factors	F	T	C	A	H	Sc
1	34.98	30.45	28.39	27.04	31.29	31.18
2	57.18	50.86	50.67	50.82	57.24	51.39
3	73.43	66.65	68.50	66.80	77.18	68.63
4	86.22	81.37	83.34	81.20	88.36	81.32
5	94.39	93.87	93.39	91.62	96.50	92.20
6	100.08	100.02	99.99	100.07	100.02	99.88
7	-	-	-	-	-	99.94

It should be mentioned that the number of factors extracted is in general six in all cases except in Science. It reflects upon the possibility of quite a few basic interest patterns. The following chapter would be devoted to a detail discussion on the results of factor analysis with their implications.

Summary

The present chapter forms the core of the study as it attempts to substantiate the hypotheses by means of concrete data. A sample of three hundred undergraduate students was selected from various Institutes and Faculties. A test-battery was administered for collecting data on interest and environmental factors. The same test-battery was administered for the second-time at an interval of a fortnight for finding out the test-retest reliability. The tests were scored and the data analysed. The range, mean and S.D.s have been found out for comparison. Intercorrelations between the interest scores obtained by each group were tabulated for carrying out factor analysis.

The environmental data were tabulated under different categories for observations and further analysis.