C H A P T E R VII

PILOT STUDY

The purpose of the pilot study was mainly to provide some valuable experience of various stages of the experiment. It was felt that it would help in fixing up the time-limit for final administration of the test and general procedure for carrying on the investigation. It was also expected that the investigator would have some opportunity for practice in the administration of the tests including oral directions. It would also provide information as to (a) the reactions of the subjects to the tests, (b) the suitability of the test to the age, abilities and interest of the boys and girls and see the adequacy of the directions. Besides, the main purpose was to try the validation of the instruments by finding out the internal consistency of each item, with the entire test and also by factor analysis. Thus, the pilot study was designed to help the investigator in conducting the main investigation effectively. The hypotheses have already been formulated and the general procedure laid down.

Sample

The sample selected for the pilot study was,

however, limited although representative. It was drawn from six different units or colleges and covered a population of both male and female undergraduate students between 18 and 22 years in various courses.

The types of institutions consisted of:

(a) Faculty of Fine Arts.

(b) Polytechnic (Institute of Technology).

(c) Institute of Agriculture.

(d) Faculty of Arts.

(e) Faculty of Commerce.

(f) Faculty of Science.

Thirty students from each institute were selected for forming the criterion groups on the basis of teachers' recommendations. Although it proved very difficult for the teachers to rate the students, it was possible for them to locate at least a section showing their distinct interest in the specific course. Every care was taken in the selection of the criterion groups which formed a crucial step in item validation by means of chi-square test.

(a) Faculty of Fine Arts

This Faculty is situated within the University campus having a quiet atmosphere and an extensive compound

full of greenaries. The selected population came from various socio-economic backgrounds and different parts of the locality. The social atmosphere was rather congenial and the co-operation obtained from the staff members of the Faculty was indeed cordial.

(b) Polytechnic (Institute of Technology)

This particular institute is well equipped and housed in a spacious building. It has its different wings offering various courses of study in engineering. The selected sample was rather heterogenous, owing to the fact that most of the students came from a wide socio-economic background.

(c) Institute of Agriculture

This institute is located in a rural surrounding far from the madding crowd. The population selected as sample was drawn from the neighbouring areas, mostly used for cultivation. This institute had a vast compound with plots of lands growing various specimens of crops on an experimental basis. This included nurseries, farm-houses, and a number of students' hostels along with staff quarters. Although the area was detached from the town, it appeared to be self-sufficient in terms of amenities like electricity, water supply, etc. The

teacher-pupil relation was very cordial and the co-operation from the staff members was excellent.

(d) Faculty of Arts

This Faculty is housed in an old but imposing building with some history behind it. The students of the Faculty comprising the sample for the pilot study coming mainly from the town and its outskirts have shown much curiosity about the tests which they took with great interest. The tradition maintained by this Faculty is quite good. The co-operation extended by this Faculty deserves gratitude.

(e) Faculty of Commerce

This Faculty occupying the neighbouring area looks bright because of its modern structure. It is housed in the busy locality of the town and occupies a good space with corridor and big halls. The student sample was essentially drawn from Baroda and the neighbouring districts. Students were responsive to the test situation and looked much excited about it.

(f) Faculty of Science

This Faculty is well equipped with modern laboratories. It is also manned with qualified staff oriented towards experimentation. The co-operation was, -

therefore, extremely cordial. The students looked enthusiastic and they took the tests quite seriously.

Tests and Techniques

Besides the tests already described, there were interviews which were conducted in case of contradictions in the responses recorded by some subjects. The purpose was to get some of the doubts cleared by means of these interviews. In all, there were five instruments for collecting data on interest as well as on environment.

General Direction

Rapport was established between the subjects and experimenter, in order to minimise the test conscious-ness.

Administration of the test was characterized by some general direction with reference to each subtest. The general direction was mostly in the form of explanation of the purpose and the use of the tests. The general direction was given with a view to creating in them a sense of ease and confidence and ensuring a certain level of motivation. It was made very clear that the test is exclusively meant for research and there is no other purpose like exposing the subjects to others. After establishing the rapport each subtest was -

distributed and specific instructions were given subtest -wise. They were also advised not to hesitate to ask for any clarification if needed.

There was no problem in creating motivation with the subjects of this age-group as it was made very clear that the test was given to measure neither knowledge nor ability.

(1) Interest-Inventory

In the original version there were 20 items comprising the inventory, each item having alternatives for choice according to the area of interest. The scoring principle was very simple and each subject would score '1' for his preference to the respective area of interest. Thus, the range of the scores on this inventory would be between '1' and '20'.

The average time taken for completing the inventory is about 15 minutes.

The written directions at the top of the inventory (sub-test 1) run as follows:

Here is a list of activities arranged in 20 groups. Your task is to select one activity from each group according to your choice. If you find in a group

more than one activities which you prefer to do, mark only that item which you like the most. Similarly, if you do not find any of the activities listed in a group upto your choice, you may add one in the column:- Any other..... Please see that you go through each item before making a final choice".

(2) Situational Test (Subtest No. 2)

As described before, this subtest was different from others in the sense that interest assessment was attempted at the conative level by means of such a situational test. Instead of depending upon mere preferences, attempt was made to expose the subjects to life - like situation demanding actual participation in reading the news-items. The items were prescribed in pairs in all possible combinations. There were 30 pairs, each pair consisting of items from two different interest areas. In all,there were 60 items, 10 belonging to each interest area.

Scoring

The subject would score '1' in the respective field of interest, every time, the subject participates in reading a news item pertaining to the field. Thus, the range of this score would be between 1 and 10. The

average time taken was 45 minutes and the direction as to how to take the test is given below:

"Here you are provided with different pairs of news items. First, you read the headings of each pair and place a tickmark (_/) against the item heading which you like more in every pair. You are also required to go through the items you choose everytime and underline some of the important terms".

(3) Information Test (Subtest No.3)

This subtest included 78 items in the original version and was designed to elicit information about the subject's general knowledge in the specific areas of interest. This indirect measure has been tried out in the hope that it would prove objective and also tap the unconscious level at which one absorbs the experience. The scoring principle adopted was simple and straightforward. A score of '1' is given every time one succeeds in giving the correct response to each item. The average time taken was 20 minutes. Instructions were given as follows:

"Here you are given some information blanks which you are required to fill in precisely. Please go through them and do not stop when you fail to answer

a particular item. Instead, you go ahead to complete the task in the limited time. You may use "Gujarati" equivalents while answering; if you are not sure of your expression in English".

(4) Projective Test (Subtest No. 4)

This device of projective nature has been tried out in the hope that it would explore the domain of motivation in an unconventional manner. The test included 72 items as already described in the foregoing pages. The scoring principle was deliberate in the sense that instead of the sophisticated scoring method as adopted by Cattell and others, it was kept much simpler. The original version used in the pilot study included 12 items pertaining to each area of interest and the subject was supposed to underline any one of the points on the scale designed to take into account the degree of one's interest in respective areas. For example, the subject would score '1' for the lowest point in the scale and '7' for the highest one. Thus, for each item the subject would score anything between '1' and '7'. As there were 12 items in each area of interest the range of the total score would be between 12 and 84. The instructions were given as follows:

"Here you are given certain questions with possible answers in terms of percentages. In most cases, it will be necessary for you to guess which of the answers is right. Make your best guess and underline one of the seven points on the given scale. Your answers may not agree with those of others, but you should make choice, which you feel, is most nearly correct. Avoid spending too much time on any one question and do not leave any question unresponded."

With a view to collecting environmental data a questionnaire was used. The following directions were given in addition in order to make sure that the exact and precise information may be drawn from the subjects without giving any scope for confusion. They were warned against any possible overlap between the responses to each item. It was made clear that there is only one answer to each item. Regarding item No.3, it was reiterated that they are required to take into account the specific locality in which most of their early days have been spent and carefully mention which of the categories like urban-industrial, rural-residential.....they belong to. In short, what was required from them is the exact classification of the area of their residence. As regards item No.5 (f) subjects were asked to report the family tradition in general, i.e. the occupation

which has been followed by most of their family members.

Two sets of information on (a) interest and (b) environment were collected by means of suitable tests and techniques. With a view to meeting the needs of the experimental design, scores were obtained and tabulated in a systematic manner.

The Validation Procedure

The validation of the instruments necessited the formation of the criterion groups. The chi-square values were found out for knowing the efficacy of each item. The results of the item analysis showing the chi-square values of each of the items are given in the Appendix (Table No. 2). Quite a few items had to be dropped out from each sub-test owing to their insignificant validity values. Another purpose of the pilot study was to find out the loadings of each of the factors on the various sub-tests. This was done by centroid analysis carried out with the correlation matrices obtained between the different sub-tests in each area of interest. The factorial validity was sought in view of the difficulties in obtaining rating scores for each individual subject.

Results of the pilot study are given in detail under three sections:

(a) Item analysis

(b) Central tendency and variability

(c) Factor (centroid) analysis.

(a) Item Analysis

As already described,20 groups of items were included in sub-test No.1. After item analysis three items viz., 6a (Humanities), 18a (Fine arts) and 18f (commerce) were discarded as they did not come up to the level of significance. Three other items viz., 18c (Agriculture), 18d (Science) and 18e (Technical) were dropped out for maintaining uniformity in the group formation. In fine, 19 groups of items were retained out of 20 although some adjustments had to be made in fitting some items in various groups.

As regards the sub-test No. 2 the following eight items were discarded owing to their poor chi-square values below the level of significance:

Interest			
Technical Item No.	Commerce Item No.	Agriculture Item No.	Humanities Item No.
3 (a) 18(a)	14 (a) 17 (a) 23 (b)	5 (a)	2 (a) 24 (b)

In this connection, it is to be mentioned that a few items had to be rotated in order to represent each area of interest in all possible combinations in equal number of times.

In the case of sub-test No.3 the following eight items were discarded in view of their insignificant chi-square values:

Interest				
Technical Item No.	Commerce Item No.	Agriculture Item No.	Humanities Item No.	Science Item No.
4	53	49	77	17
33				21
-------				74

With a view to maintaining uniformity it was necessary to drop other ten items as follows on the basis of relatively lower validity values.

Interest				
Fine Arts Item No.	Technical Item No.	Commerce Item No.	Agriculture Item No.	Humanities Item No.
5	14	39	6	7
25		73	67	76
42				

In short, sixty items were retained out of seventy eight items so that each area of interest may be represented by equal number of items.

So far as sub-test No. 4 is concerned, the following seven items could not be retained because of their insignificant chi-square values.

Interest				
Technical	Commerce	Agriculture	Humanities	Science
62	8	31	18	1
			42	36

Besides, other five items were to be dropped out for keeping equal number of items in each area of interest

Interest			
F	T	C	A
25	68	20	6
56			

Thus twelve items had to be discarded in all leading to the retention of sixty items.

The technique used for collecting environmental data was, however, a questionnaire as mentioned earlier. The purpose was to collect some relevant data which were assumed to be related to the development of interest. The efficacy of the instrument depended upon how well this could serve the purpose of gathering data in a

systematic manner. A number of items was constructed and arranged under eight groups with a view to affecting desirable revision if necessary. It would be observed that quite a few of them were only exploratory in nature because of their indirect bearing on this investigation, while a few proved rather weak for drawing the exact information. As such they needed rephrasing and re-organization in the individual items and total framework, respectively.

(b) Central Tendency and Variability

The pilot study helped the investigator to know about the range, the nature of distribution, the central tendency and variability of the interest scores derived by means of four sub-tests constructed for the purpose. The following table presents the data:

Interest	Range	Mean	S.D.
Fine Arts	13 - 98	48.56	17.3
Technical	26 - 94	60.5	15.3
Commerce	27 - 91	51.1	13.3
Agriculture	28 -100	52.94	16.5
Humanities	32 - 92	55.06	12.6
Science	22 -111	56.33	16.9

The range of the scores as shown in the table varies from one area of interest to another. This bespeaks the nature of the distribution of the various types of interest scores and also reveals that one may have interests in varying degrees in a number of areas. In other words, that interest may take a number of patterns is hinted at by this fact. Similarly, the central tendencies which differ considerably from one to another area of interest confirmed the fact that a group of subjects might have dominant interest in one field and relatively lower interest in other. It would be seen from the above table that the mean interest score in technical field is higher than that in other areas. Similarly, the mean of 48.56 in Fine Arts interest reveals the fact that the group as a whole has relatively poorer interest in Fine Arts than that in Science or Technical. So far as the standard deviations are concerned, they also vary from area to area showing the difference in the nature of distribution of various interest scores. In short, the table presenting the Range, Mean and Standard Deviation in all the six areas of interest, indicates the possibility of identifying certain broad patterns of interest and discovering even an overlap between them.

(c) Factor Analysis

The inter-correlations (presented in the

following table) between various subtests indicate the fact that all of them are measuring something in common to a fairly significant extent.

Test No.	Interest	ST1	ST2	ST3	ST4
ST1	Fine Arts	(1)	.645	.804	.588
	Technical	(1)	.506	.570	.482
	Commerce	(1)	.430	.870	.530
	Agriculture	(1)	.619	.681	.578
	Humanities	(1)	.650	.586	.516
	Science	(1)	.551	.617	.553
ST2	Fine Arts		(1)	.610	.540
	Technical		(1)	.516	.359
	Commerce		(1)	.170	.320
	Agriculture		(1)	.438	.452
	Humanities		(1)	.428	.419
	Science		(1)	.508	.315
ST3	Fine Arts			(1)	.601
	Technical			(1)	.430
	Commerce			(1)	.490
	Agriculture			(1)	.602
	Humanities			(1)	.260
	Science			(1)	.377

Test No.	Interest	ST1	ST2	ST3	ST4
ST4	Fine Arts				(1)
	Technical				(1)
	Commerce				(1)
	Agriculture				(1)
	Humanities				(1)
	Science				(1)

Inspite of the variations in the correlation figures obtained between various subtests in all the interest areas, there is a consistent picture showing that all the tests are working and discriminating well. The first factor loading is observed to be almost uniform on all the subtests and suggest the possibility of the aggregation of all the subtest scores into a composite one without making variation in the weightages of the subtests. As regards other factor no meaningful pattern emerges and this indicates that the first factor can be identified as the general factor of interest in respective fields. The maximum contribution of the first factor to the variance in each case (presented in the table on the next page) ✕ confirms that the tests are measuring interest to a considerable extent.

	Interest	ST1	ST2	ST3	ST4
	Fine Arts	.900	.817	.893	.793
	Technical	.829	.762	.815	.712
K_1	Commerce	.938	.538	.865	.744
	Agriculture	.886	.755	.836	.801
	Humanities	.897	.811	.724	.683
	Science	.880	.754	.805	.697

From the above table, it is observed that the first factor has maximum loadings on subtest 1 (Inventory) in respective interest areas. It indicates the maximum efficacy of that subtest. It is also observed that the loadings vary from subtest to subtest designed to measure each type of interest. On an analysis of all the factor loadings on other subtests, it is obvious that subtest 3 (Information Test) is also proving quite effective as a technique as the loadings of the first factor are consistently high on this variable as well. As regards the efficacy of subtest 2, it would be observed that the first factor loadings on this subtest are considerably high except in the case of Commerce interest. The reason of a relatively lower loading in case of Commerce interest is, however, not so obvious.

In case of subtest 4 the position is quite satisfactory in the sense that the first factor has almost uniformly high loadings on this sub-test. It is only in the case of humanities interest that the loading is slightly lower than in other cases. It may, however, be commented upon that the high loading of the first factor on each of the subtests indicates the efficacy of all the subtests in measuring interest. It also justifies the aggregation of the interest scores derived from four subtests.

Revision of Tests

Revision of the tests and techniques was one of the purposes of the pilot study. With a view to making the necessary revision of the tests and techniques, it was decided to validate each and every test item against certain criteria. After validation was completed various test items of each subtest had to be modified or revised. In the pilot study each test was administered separately. It was experienced that separate administration of the subtests demands a longer period and causes some distraction each time. It was, therefore, considered desirable to include the tests in one battery as subtests, so that instruction can be given for all the subtests at a time before the subjects started taking the tests. Another advantage of this was that the subjects who could complete the test speedily had not to wait for others and this

gave incentive to others for timely completion.

The order of the subtests comprising the test battery was slightly changed as follows:

Pilot Study	Main Investigation
1. Inventory	1. Environmental data sheet
2. Situational Tests (News items)	2. Inventory
3. Information Test	3. Projective Test
4. Projective Test (How much how many)	4. Information Test
5. Environmental Questionnaire	5. Situational Test

This change in order was effected when it was experienced that the situational test is taking too much time and bringing a feeling of noredom in their mind. This was also affecting their reactions to the remaining tests to a considerable extent. It was expected that the change in the order would provide a feeling of satisfaction because of the possibility of completing three in the test-battery and giving a fresh incentive for completion of the rest.

In the light of the experiences, it was felt that certain test-items requires improvement. In the inventory item Nos.4(b) and 4(d) read, "while going on

excursion somewhere I would like to:

(b) study the soil or rocks, ( )

(d) collect the specimen of small plants typical in that area, ( )

It was felt that the above items are somewhat ambiguous, in the sense that subjects interested in Agriculture and subjects interested in Science may show his preference to both the items. Therefore, the following modification was made to make it more specific for the purpose of effective classification:

"While going on excursion somewhere I would like to:

- collect typical specimens of rocks or soil for a Science exhibition ( )

- collect typical specimens of plants for my garden ( )".

Whereas in the case of item No. 5 it was felt that the item provides too narrow a scope for choice because of its highly specific nature. Originally, the

items read as follows: "If I get an opportunity to travel I would like to see:

(a) Rock-cut temple,

(c) Bhilai Steel Plant,

(f) Bombay Export Market.

In this case, it was felt that subjects may be interested in sculpture in general while they may not be in a position to show any preference for Rock-cut sculpture partly because of their ignorance or confusion as to what is a Rock-cut. Similarly, items 5(c) and 5(f) offer limited scope for choice owing to their specific contexts. The items were, therefore, rephrased as follows for extending the scope for choice:

"If I get an opportunity to travel I would like to see:

- a good piece of sculpture ( )
- a big steel plant ( )
- a big export market ( )".

In this inventory item No. 18(a) and 18(f) proved statistically insignificant, consequently the item as a whole had to be dropped out of the group. Out of the remaining 19 groups of items, one item viz. No. 6(a) proved insignificant. This was replaced by item No.18(b), which had its individual significant chi-square value but had to be dropped out for reasons described above.

As regards the situational test eight items were discarded owing to their poor discriminating values. This posed a problem of representing each interest area by equal number of items without repetition. This is why some of the items were used more than once for rotation with a view to bringing in all possible combinations in the formation of pairs. This change in the structure of the groups would notm, of course, make any difference either in administration or in scoring.

Information test, however, required no change in respect of scoring principle or administration procedure. In all, eighteen items (eight for poor chi-square values and ten for the sake of uniformity) were discarded out of Seventyeight items in the final form. Thus, ten items were ultimately retained in the final form.

Environmental Questionnaire

As mentioned earlier, the device used for drawing environmental information was in the form of questionnaire with eight groups of items. The purpose of using this questionnaire in the pilot study was mainly exploratory. In other words, the investigator was interested in checking up the prima facie efficacy of this instrument and also to see how the subjects react to the items. The experience derived from pilot study

has been a considerable help in finalising the form as well as the size of the instrument, no doubt. A number of items has been dropped out of the final form used in the main investigation as they appear to be either ambiguous or irrelevant to the purpose. For example, items 2, 4, 5(b) etc. were included in the original version but ultimately discarded as it was found that they have very limited bearing on the specific problem of the investigation.

Quite a few items have been twisted for making them more precise and direct. For example, item No. 5(b) and 7 have been used in the final version in a different form. Lastly, some of the items like 5(d) and 8 could not be retained in the final version with a view to delimiting the scope of study. The quantitative measurement of environment is a formidable task and that is why attempt has been made to get a few categories under which the environmental data could be arranged for the analysis of variance.

Summary

The pilot study formed a crucial step in this investigation. The purpose of the pilot study was to process the instruments and finalise the procedure to be adopted in the main investigation. A few hypotheses were set up for their verification through the main -

investigation. A sample of 180 was chosen from various institutes so as to form criterion groups. The tests constructed were tried out and the results obtained mainly for the purpose of their validation. Two types of validation procedure were adopted. Item analysis was carried out for finding out the chi-square value of each item while centroid analysis was done for finding out the factorial validity. Revision of the tests was made in the light of the findings of the pilot study. The results of the factor analysis determined the individual weightages of subtests and favoured the aggregation of the individual subtest scores into a composite whole.