THE PRESENT STUDY

The plan of the study is discussed at length in the preceding Chapter. Here, we discuss the detailed procedure adopted. This procedure is common for all the 5 scales under construction.

Formulation of Statements:
The first step in the construction of an attitude scale is the collection of opinions and statements to comprise the contents of the scale. Logically, we are expected to tap various sources to get a large number of opinion statements for a comprehensive coverage of the issues under study. We already had a list of 76 issues, which were classified in five groups, each to cover a specified region. We then proceeded to construct the scales. The first task now confronting us was the collection and editing of statements related to and covering each of these regions. These were now to be compiled from all available sources and edited according to certain rules.

It must be stated here that the statements should be such as to give coverage to all aspects of these issues. They should further depict various shades of opinions. The other consi-
derations to be borne in mind with regard to the collection, formulation and editing of statements are detailed out in Chapter 4.

One of the major sources of collection of statements is the opinions of people on these issues. The student sample was considered to be adequate and readily available for this. A sample of 100 students from Gujarat University was so selected as to be representative of all branches of study. This was particularly done to cover all shades of opinions on the issues involved. The subjects were presented a preliminary questionnaire consisting of the initially compiled 76 issues, such as, marriage, joint family system, rights of women, nationalization of industries, trade unions, world government, patriotism, God, religion, war, capital punishment, etc. These issues were listed in a serial order and presented to the subjects in the form of an open-end questionnaire. This was done to get free and spontaneous reactions. The subjects were instructed to express their views freely without any hint or suggestion being given to them. Plain sheets of papers were attached to the questionnaires to state one's views about the issues contained therein. Elaborate instructions were given in this regard.
To facilitate free expression the questionnaire was presented in three languages, namely, English (the commonly used language), Hindi (the national language) and Gujarati (the regional language). Complete anonymity was assured to the respondents. The responses of the students in Gujarati and Hindi languages were then translated into English with the help of Gujarati-English and Hindi-English knowing experts. The translations were carried out not in too literal a manner but in flowing and normal colloquialism so as to reproduce the precise sense of the original.

The data were analysed by compiling the opinions of students on separate uniform slips of paper. Seventy-six envelopes were further prepared, one for each issue, and the slips classified into these. Then on the basis of similarity and relatedness these 76 envelopes were further classified into the aforementioned five groups, each group forming a comprehensive and homogeneous unit, for which each of the 5 scales mentioned earlier were to be constructed.

Opinions of students were further formulated in the form of statements. In addition, statements and opinions were also collected from various other sources like, books, articles.
journals, previous scales and other literature in the field.

The investigator thus began with a total collection of about 1000 statements, approximately 200 for each scale. These were subjected to detailed study and scrutiny, which led to the elimination of the irrelevant, doubtful, vague and repetitive ones. The rules listed by Wang (1932) and Thurstone (1929) to edit and scrutinize the statements were followed. As a result of these procedures, about 120 statements for each scale were retained to work upon, making a total of 600 statements for the five scales.

Since the purpose of the study was to construct scales in Hindi, the 600 statements were very carefully translated. This called for considerable time and effort. Advice on the use of suitable and adequate usage of words, terms and expressions was sought from relevant sources. The aim was not to make too literal translation but to bring out the full sense of the original statements in Hindi. By discussions with and advice from experts, associates, teachers and students, the statements were duly modified though a few had to be omitted.

At this stage, it was felt necessary to conduct a pilot project to check and perfect the questionnaires.
The Pilot Study.

As the design of the study given earlier indicates, this study is planned to be an extensive one. Besides, the problem of construction of attitude scales calls for rigorous methodology and the usage of extensive statistical techniques. Moreover, in the present survey five separate social attitude scales are being constructed by using a combination of Thurstone and Likert scaling methods. The sample planned for coverage too, runs into over a thousand subjects. In view of all this it was felt that it would be very beneficial to conduct a preliminary pilot study on a small sample.

As far as possible, this pilot project was to be a miniature replica of the final study. It was to serve as an experimental try-out of the procedure on a small but representative sample so as to serve as a true guide for the next large scale study. Besides aiding us in streamlining the procedure, it was expected to expose the difficulties and pitfalls that were likely to be encountered in the final study. Specifically, the pilot project was designed to throw light on two aspects - firstly, whether it was feasible to work with the scaling methods on our student sample. Though the Thurstone and Likert methods used were not
very complex, they call for precise judgement on the part of the subject. Secondly, we also wanted to ascertain whether Hindi, the national language, could be used as a mode of expression, the regional language of our sample being Gujarati. The pilot project was also necessary to check upon the type of statements to be formulated and the instructions to be given to the subjects.

On review of the objectives of the pilot project, it was found necessary to limit its scope. The construction of attitude scales is not an entirely new field. The methods and the procedures we were going to use are more or less standard ones as a result of various experimental studies on the subject. They are tried before by various other authors. We already have some insight into the problems we may encounter so far as the procedures are concerned. It was, therefore, felt that the pilot run on the Thurstone technique alone would be sufficient. This was so because the use of the Thurstone method would satisfy us with the subjects' ability to comply with it. As far as the respondents are concerned, the Likert scaling procedure is comparatively simpler than the Thurstone procedure. In the latter the subjects who are the judges, have to carefully evaluate each statement, judge precisely the intensity of
attitudes expressed by them, peruse minutely the rating continuum and then classify the items in the given categories, keeping their own attitudes aside. Whereas, in the Likert method, the subjects have simply to indicate the extent of their agreement or disagreement with the statements. It is certainly easier to state one’s agreement and disagreement with the statement rather than to judge the attitudes expressed by the statements and then rate these judiciously. It was, therefore, necessary to try out Thurstone method to check its feasibility on the student sample, whether they can understand the task before them and their ability to do it.

Thus, in Thurstone technique the task for the respondents is a harder one. In the Likert technique, on the other hand, the respondents' task is simpler but cumbersome and time consuming for the investigator. The analysis of data calls for item intercorrelations. If undertaken at this time, it would take up considerable time and detract us from the final study. Furthermore, the pilot sample is usually a small one. Therefore, when we separate the high and low groups (in Likert procedure) we may be left with very few cases to work upon. The results found will be questionable. If they are unsatisfactory, we
would not know the reasons for this failure. Is it due to the inadequacy of the technique, the language or substance of the items, or the size of the sample? Besides, the Thurstone technique being the more complex one, certainly needs an experimental try-out, before we launch the final project. If this found workable, the Likert being the simpler method should not be encountered with difficulties. Trying out the Thurstone technique alone would give us sufficient insight into the feasibility of scaling methods, the formulation of instructions and statements, etc.

The second limitation that was put on the pilot project was to limit the number of scales to try. Since the same procedure is being applied in the construction of all the five scales, it was felt to be unnecessary to conduct the try-out study on all of them. It was, therefore, decided to take up only one of the five scales for this purpose.

An exact replica of the study from Thurstone scaling method to reliability, validity test on all the five scales would have been unnecessary and time consuming. The nature of the study on hand is such that a small try-out on the preliminary stop can
give us sufficient insight into the feasibility of the whole, the problems to be encountered and, the checks to be kept.

It was accordingly decided to conduct an experimental study on a small sample by trying only the first, but comparatively harder and important, step of the procedure on one scale alone. This led to the selection of a sample of 40 students to try out the internationalism scale.

First step in the pilot project consisted of interviewing a group of university teachers. After the items for all the five scales had been compiled, edited and translated in Hindi, they were prepared in Thurstone type forms along with the definitions of the scale terms, the rating continuum and instructions for rating in Hindi. Eight university teachers were presented with these statement forms. They were required to critically examine the definitions of scale terms, rating continuum and the statements with a view to suggesting changes and modifications in them. This led to substantial modifications in the definitions of the terms used and the other aspects of the questionnaires. This phase of pilot project was, however, conducted on all of the five scales.

At this stage, the terms were adequately defined, the continuum
defined and questionnaires accurately and idiomatically translated into Hindi. Internationalism questionnaire was now picked up to be tried on student sample. A sample of 40 postgraduate students was then selected from psychology, commerce, engineering and Science batches. There were 15 students from Psychology, 15 from Science, 3 from Engineering and 7 from Commerce. The statements for Internationalism scale were then prepared in a Thurstone type questionnaire. The questionnaire contained besides the statements, definitions of the scale terms, the rating continuum and instructions for rating. In accordance with the Thurstone technique the subjects were to rate the items on a 7 point scale. Two versions of this questionnaire, Hindi and Gujarati, were prepared (Appendix B 1, B 2). With the help of random number tables the sample was divided into two groups of 20 subjects each. One group was administered the questionnaire in Hindi and the other in Gujarati. For all practical purposes it was seen that the groups were in most part comparable to each other. Data were collected in their classroom situations, with instructions etc being given in a similar manner to both groups. Instructions were printed on the questionnaires, but it was felt necessary to explain these verbally during administration.
The data were tabulated and analysed for each group separately. Responses with which each item was placed in the given categories were tabulated. To calculate medians (scale values) and Q values, these frequencies were translated into cumulative frequencies and then cumulative proportions. Ogive curves were plotted for each statement for each of the two groups. The 100 graphs thus drawn showed considerable similarity in trend for the Hindi and Gujarati groups. A few typical sets of graphs are presented here:
The scale and Q values of the figures given above are as follows:

<table>
<thead>
<tr>
<th>Fig.</th>
<th>Hindi</th>
<th>Gujarati</th>
<th>Q Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5.6</td>
<td>5.6</td>
<td>0.9</td>
</tr>
<tr>
<td>2</td>
<td>5.0</td>
<td>5.0</td>
<td>1.3</td>
</tr>
<tr>
<td>3</td>
<td>2.2</td>
<td>2.0</td>
<td>1.2</td>
</tr>
</tbody>
</table>

From these figures it is obvious that curves for both the groups show similar distributions with similar scale and Q values.

It must be mentioned here that most of the graphs followed the patterns shown by Figures 1 and 2. Precisely over 80 percent of the graphs showed no significant language differences. The 20 percent which showed a little language difference were characterised by high Q values, over 2.5. These results indicate that the language factor does not influence the responses. Hence, Hindi can very conveniently be used as the medium of expression.

Subsequent interviews which the author conducted with many other subjects, including also some undergraduate students lend support to this view. The interviewers experienced no difficulty in understanding the items phrased in Hindi. From their academic records also it was found that Hindi is a
compulsory paper up to graduation. That prepares sufficient background for Hindi language. Some points regarding the clarity of instructions, wording of statements and familiarity with the issues involved were also discussed with the subjects.

On the basis of results from this study a few modifications regarding instructions and presentation were made in the questionnaires for other scales also. The study proved that Thurstone method is feasible to use with our subjects and Hindi as the language of the statements is within their comprehension. It was felt that the instructions printed on the questionnaires alone are not sufficient for the subjects.

Since the Thurstone procedure requires a rather complex system of ratings, oral and more detailed instructions are necessary to give. Consequently, it was decided to explain to the subjects orally along with the instructions printed in the questionnaires the procedure of rating during final administration.

The Scaling Procedure:

On the basis of pilot study results the questionnaires and
statements were modified and the final questionnaires were prepared. As indicated earlier the method followed here was Edwards and Kilpatrick's (1940) Scale-Discrimination Technique with slight modifications. The steps in the procedure followed are listed below in sequence.

1. Scaling the items by the Thurstone method of equal-appearing-intervals: After the statements about all issues under study (the issues involved in the 5 scales) had been compiled, scrutinized and finalized, as discussed earlier, they were prepared in Thurstone type Attitude questionnaires. There were now 100 statements for each of the five scales. In total we had 500 statements. These were to be sorted by a group of judges in accordance with the Thurstone method of equal-appearing-intervals. For reasons of time as well effort, it was not feasible to present each judge with this complete set of 500 items for evaluation. Therefore, 5 independent questionnaires were now prepared, one for each attitude scale, comprising of 100 statements each. The questionnaires were prepared in the following manner:

The first page of the questionnaire provided the judges with the definitions of the scale terms used, like, "social progressivism", (socialismo, आर्थिक निर्भरता)
Internationalism (अन्तर्राष्ट्रीयवाद) etc; a description of the scale continuum like "conservatism - progressivism (संरक्षणवाद - उन्नयनवाद)", "national-internationalism (राष्ट्रवाद - अन्तर्राष्ट्रीयवाद)", etc., and an understanding of the rating scale. A 7 point rating continuum was used for sorting the statements. Three points on the continuum namely, the two ends and the middle most point, were indicated in descriptive terms. The rest of the categories will be described as interspersed between these three points.

The questionnaire also contained detailed instructions for the judges regarding the procedure to be adopted for sorting.

It must be noted here that the definitions of the scale terms presented to the subjects were formulated in very simple language, so as to be within an easy grasp of the average person. The investigator then requested some university teachers to go through the definitions and suggest modifications therein. High sounding words and scientific terminology were avoided in preparing definitions.

The inside pages of the questionnaires contained the statements relating to the particular attitude variable. The statements were presented in a random order in each of the questionnaires. The 7 point rating continuum (or 7 categories) were designated by numbers 1 through 7. These were listed to the left of each statement. This is in accordance with the Seashore and Havner (1933) method of rating.
The same procedure was followed in all the 5 questionnaires which were named as: 1. Social Progressivism Questionnaire; 2. Economic Progressivism Questionnaire; 3. Internationalism Questionnaire; 4. Religionism Questionnaire; and 5. Tenderminded-Toughmindedness Questionnaire. (Appendices C 1 through C 5).

As the pilot study shows, all the questionnaires were first presented to university teachers to evaluate the definitions of the scale terms, the statements and the instructions. When the questionnaires were finalised post-graduate students were selected to act as judges. They were required to rate the statements on the given scale in accordance with the instructions provided therein.

Since each questionnaire contained 100 statements and there were 5 such questionnaires (there being 5 scales to be constructed) each judge was required to answer only one of the five questionnaires. In other words, each group of judges had to sort a set of 100 items dealing with one attitude.
On completion of the sorting procedure frequencies with which each item was placed in the given categories were tabulated for each questionnaire separately. Then, the cumulative frequencies were arrived at. Two statistics were now obtained for each item: 1. Q-value or interquartile range (difference between the 75th and 25th percentile), and 2. median value (the 50th percentile). For calculation of median and Q values each of the 7 categories used for rating was assigned an arbitrary weight, in the following manner. Category 1, representing the extreme left of the continuum was given a weightage of '1'. The lower and upper limits of this category ranged from 0.0 to 0.9. Category 7 representing the extreme right of the continuum was assigned a weight of 7, ranging from 6.0 to 6.9. In a similar manner, weights were assigned to the other categories.

Medians and Q values were then calculated with the help of a Nomograph prepared by Jurgenson (1948). The nomograph provides a rapid determination of percentiles. This Nomograph was prepared on a thick 22" by 30" graph-paper, by drawing two parallel vertical lines each 25" in length and 10" apart,
joined in the middle by a horizontal line and thus making a big "H". Hundred cases are represented by the parallel vertical lines allowing one quarter of an inch for each case.

Q values served as the index of ambiguity. Larger the Q, greater the dispersion or disagreement among the judges, hence more ambiguous the statement. Medians served as the scale values of the items on the continuum.

After calculating Q values for each item, a median of the Q values, for each questionnaire separately was calculated. Items falling above the median Q value in each questionnaire were rejected, as being the more ambiguous ones. Items falling below the median Q values were retained for further analysis. This amounted to rejecting about 50 percent of the items from each scale under construction.

2. Scaling the items by the Likert method of Summated Ratings: The next step now consisted of scaling the items screened by Thurstone technique according to Likert procedure. This is essential as Thurstone method provides no basis for selecting the more discriminating items from the same scale-interval with comparable Q values. As demonstrated by Edwards (1957)
Items from the same scale interval and similar Q values may differ significantly in their power to discriminate between the high and low scorers.

Since, approximately 50 percent of items from each questionnaire were eliminated after screening by Thurstone technique, it was now decided to continue all the 5 questionnaires into one. Accordingly, the items for all the 5 scales amounting to 25? in total were prepared in the form of a Likert type questionnaire. The subjects were instructed to respond to these items in terms of 5 response categories - "strongly agree", "agree on the whole", "neutral", "disagree on the whole" and "strongly disagree".

The first page of the questionnaire contained instructions for the subjects and the inside pages contained the 257 statements. These were divided into five sections, representing the five scales. The five response categories, as mentioned above, were listed at the right of each statement. The categories were designated by numbers 1 through 5. However, the descriptive words for each of the 5 response categories were given on top of each page and below these followed the numbers representing each category.
As indicated earlier, the questionnaire was divided into five sections, representing the five scales. But the scale terms were not mentioned in the questionnaire so as not to give any clue to the respondents. Instead, the five scales were denoted therein as section 1, 2, 3, 4, and 5. The whole questionnaire was headed by a general title "Social Attitude Questionnaire (सामाजिक अभिलेख प्रश्नावली)".

In each section the statements were presented in a random order and were numbered 1 through 6 separately for each section.

(Appendix "D")

These questionnaires were now distributed to a selected group of subjects. In keeping with the Likert procedure the subjects were instructed to respond to the items in terms of 5 response categories mentioned earlier.

Scoring was done in the prescribed Likert fashion. Arbitrary weights 1 through 5 were assigned to the five response categories. The questionnaires were scored reversing the continuum in accordance with the Thurstone scale values of the items as shown in Table 2.

(Turn over for table)
TABLE 2

METHOD OF ASSIGNING WEIGHTS TO RESPONSE CATEGORIES

<table>
<thead>
<tr>
<th>Statement Nos</th>
<th>Thurstone Scale value</th>
<th>Response Categories</th>
<th>Weights Assigned</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>5.9</td>
<td>5 strongly agree</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 agree on the whole</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 Neutral</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 Disagree on the whole</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 Strongly Disagree</td>
<td>1</td>
</tr>
<tr>
<td>47</td>
<td>1.6</td>
<td>5 strongly agree</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 agree on the whole</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 Neutral</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 Disagree on the whole</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 Strongly disagree</td>
<td>5</td>
</tr>
</tbody>
</table>
Thus, for items with Thurstone scale values above 3.9
the response categories 5, 4, 3, 2, 1 were assigned weights of
5, 4, 3, 2, 1 respectively. But for items with Thurstone
scale values below 3.0, the response categories 5, 4, 3, 2, 1
were assigned weight of 1, 2, 3, 4, 5 respectively.

This may be further elaborated. For example, an individual
who strongly agrees with an item having Thurstone scale value
excess of 3.9 was given a score of 5 rather than 1. Conversely,
a person who strongly disagrees with an item having Thurstone
scale value below 3.0 was also given a score of 5 rather than 1.
In other words,” strongly agree " responses to items
with Thurstone scale values above 3.9 and " strongly disagree "
responses to items with Thurstone scale values below 3.0 were
assigned weights of 5. Conversely, " strongly agree " responses to
items with Thurstone scale values below 3.0 and " strongly
disagree " responses to items with Thurstone scale values above
3.9 were assigned scores of 1. In a similar fashion scores of
4, 3, 2 were assigned to the other response categories
reversing the continuum depending upon the value of the items.
( there were no items with scale values between 3.0 to 3.9 )

Thus consistency was maintained between high scores on Likert
scale and high Thurstone scale-values, and low scores on Skurz scale and low Thurstone scale values.

A total score for each individual was then obtained by summing his responses to all the items in each section separately.

To test the discriminatory power of each item, the test population was divided into upper and lower groups with regard to the total scores for each scale separately. The investigator selected the upper 100 subjects with high scores and the bottom 100 subjects with low scores to serve as criterion groups.

As discussed in Chapter 4, there is no hard and fast rule for selecting the percentage of cases to represent the high and low groups. Authors have taken anywhere between 10 to 27 percent. The present author took bottom 12.5 and top 12.5 percent cases with respect to their total scores.

The items were now subjected to item-analysis. Frequencies in each of the response categories for the "high" and "low" groups were tabulated for each item separately. Phi-coefficients were then calculated. For this purpose the
Five response categories were dichotomized into two. This was done according to the procedure suggested by Edwards (1957). Table 3 shows how the categories were dichotomized.

**TABLE 3**

**DICHOTOMIZING THE RESPONSE CATEGORIES FOR HIGH AND LOW GROUPS; (STATEMENT NUMBER 5, SCALE TO - TO )**

<table>
<thead>
<tr>
<th>Response Categories</th>
<th>Low Group (n=100)</th>
<th>High Group (n=100)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>6</td>
<td>84</td>
</tr>
<tr>
<td>Agree on the whole</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Neutral</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Disagree on the whole</td>
<td>2</td>
<td>22</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>1</td>
<td>64</td>
</tr>
</tbody>
</table>

The rule followed in dichotomizing the categories was to draw a line through the "high" and "low" columns of Table 3 in such
In the above-example, the line was drawn below Category 4 and 3. This would give us $2 + 8 = 10$ subjects in the low group above the line and, $2 + 0 + 0 = 2$ subjects in the high group below the line. This will yield a total of $10 + 2 = 12$ subjects. Shifting the line between any other categories would give us a higher figure. Consequently, in this example, responses above the line, namely Categories 5 and 4 are combined for the two groups separately. Similarly, responses below the lines, namely Categories 3, 2 and 1 are likewise combined for the two groups respectively. All-coefficients are then calculated for these figures. In the same manner, response categories for all items were dichotomized and phi-coefficients calculated.

The reasons for doing so may further be elaborated. The item given in Table 3 has Thurstone scale value of 4.9, that is, falling toward the high end. Therefore, we would expect majority of subjects in the high group, that is, with high scores to agree with the item. On the other hand,
majority of subjects in the low group, that is, with low scores are expected to disagree with the item. The extent to which this occurs is a measure of the relationship between single item performance and total score. At the same time, this will indicate whether or not the item differentiates between the two extreme groups. The rule followed to dichotomize the categories is based upon this, that is, to minimize the number of cases at one end for the low group and at the other end for the high group.

The task of finding the discriminatory power of each statement involved an extension of the above procedure. Phi-coefficients were calculated to find out whether an item validly separates the high and low groups. As discussed earlier, phi-coefficients reflect the degree of correlation between the item response and total score. A high phi-value will indicate a high correlation between the item and total score, that is, the item differentiate between the response patterns of those scoring high and those scoring low on the total scale.

There are various procedures for calculating the discriminatory power of the items. The author chose phi-coefficients for
its simplicity and ease in quick calculation. Phi-coefficients for each item for all the five scales were calculated with the help of tables prepared by Jurgensen (1947).

The phi-coefficients are now plotted in a new two-way table with Thurstone scale values on horizontal axis and the phi-values on vertical axis. Items for the final scales are then selected from this distribution by selecting about an equal number of items with high phi-values from each of the Thurstone scale intervals. Thus a few more items were further eliminated. The investigator was now left with a total of 110 items (Scale I - 22, Scale II - 24, Scale III - 22, Scale IV - 22, and Scale V - 20). Those items comprised the final scales.

Reliability Validity Determination: In order to test the reliability and validity of the scales, these 110 items were once again presented in a Likert type questionnaire to a new group of subjects. The five scales were again combined into one questionnaire and, the subjects were given five response categories - strongly agree through neutral to strongly disagree. The instructions and layout of the
questionnaire was similar to that adopted at the previous stage. Items in each of the 5 sections were renumbered from 1 through n. (Appendix 'E'). These questionnaires were distributed to another group of subjects not covered earlier. Data for reliability test were obtained from about 200 university students. Responses were scored as discussed elsewhere. An individual's attitude score was the summation of his responses to all the items in each scale separately.

Reliability coefficients were obtained by the split-half method. For this purpose, an individual's score was further broken into two parts - summation of responses on odd-numbered items and on even-numbered items. Flanagan's formula (Guilford 1954) was used to calculate the reliability coefficients. Details in this regard are given in Chapter 12.

Regarding the validity of scales, there are number of checks in the method itself (discussed at length in Chapter 12). However, to supplement this, additional data on validity test were collected. This consisted of obtaining judgements of experts and matching them with the scoring key prepared for each scale. Furthermore, the subjects' scores were correlated
with their self-ratings on each attitude variable. Details in this regard are discussed in Chapter 12.

The Sample: As stressed earlier, the sample for the present investigation consisted of university students drawn from various colleges in Ahmedabad city. The students were approached through the heads of their institutions and departments. On the whole, these persons were cooperative and extended considerable help at all phases of data collection. They further showed considerable interest in the study when the questionnaires were forwarded to them for their perusal.

Of course, the investigator did experience a number of practical difficulties during the course of data collection. There was prevalent a general feeling of reluctance amongst students to fill in the questionnaire. This is evident when we review the fact that some 3065 students had to be initially approached to get a return of 2030 only. Of the total number of questionnaires issued out the returns got were approximately 60 percent. Some of the heads of the institutions too were reluctant to permit the use of their students as subjects. These, however, are normal difficulties one encounters in data-collection on a large scale. Had there been better cooperation
the collection would have been completed within a shorter period of time and perhaps, the discarded and incomplete questionnaires would have been fewer. These, under the present circumstances, were approximately 25 percent of the total received.

The city of Ahmedabad being a large one and the capital of the State of Gujarat has several educational institutions with thousands of students coming from all parts of India. The fields of study too are numerous and covering all major areas of education. Most of the institutions in the city are affiliated to Gujarat University. There are over 20 colleges affiliated to Gujarat University. Besides this, there are 4 university departments and 5 other institutions recognized by the University. (according to the revised list on 1 - 10- 1961 )

The period of education comprises of four years for graduation ( after high school ) for arts and science subjects and five to six years ( after high school ) for medical, engineering, pharmacy, etc. The post-graduate courses generally comprise of two years after graduation.

It will not be out of place to tender a brief description of
the student sample utilised here. The students were typical of the college-going population in India. Though the majority of them were from Gujarat, the rest of the country was indeed represented. There were, for example, quite a few Punjabis, Marwaris, Christians, Sindhies, South Indians, North Indians, Bengalis, Marwaris, etc. There was a good representation of every caste, creed and religion. The age range of the subjects was considerable. At the undergraduate level the age range was generally between 17 and 25 years. At the post-graduate level, it varied between 21 to 27.

There were, however, some amongst the teachers trainees (education) who were over 30 years.

The economic and social status of the subjects was equally wide. At one end were the subjects belong to the Millionnaire's class, and at the other end the lower economic groups were equally well represented. A good many of them hailed from nearby villages and resided in hostels during the period of their education. Some of them were (at the post-graduate level) part-time workers pursuing their education either in the morning or evening shifts.
These numerous students were engaged in the following disciplines of study: Arts, Science, Commerce, Law, Education, Engineering, Medical and Pharmacy. From amongst these data were collected in classroom batches as and when required. Random number tables were also used in selecting sample when and where feasible. To ensure complete anonymity, the students were not required to disclose their identity in their questionnaires at any phase of data-collection. A check was however kept on their branch of study and sex, which is discussed at appropriate places.

The design of the study cited earlier necessitated the tapping of our sample at four phases of scale construction. These are: 1. collection of opinion statements; 2. in scaling the items on Thurstone procedure; 3. in scaling the items on Likert procedure and 4. testing the reliability and validity of the scales. The sample covered at each stage will be discussed presently.

**STEP I:** One of the sources for compilation of statements for the scales under constructions was the collection of views on the issues from the students community.
For this purpose a sample of 100 students was randomly selected, who were presented with a 76 item questionnaire (appendix A'). These students were so selected as to represent all available fields of study. In doing so, the views of an assorted group could be obtained to represent all shades of opinions. Since this was a preliminary step, dealing only with the collection of opinions to serve as statements for the final scales, a sample of 100 was considered to be sufficient.

STEP II: This step required the subjects to sort out statements according to Thurstone technique. For this phase, postgraduate students from all branches of study were selected. Since the scales were to be standardized on student population, this group was chosen. Incidentally, the investigator required matured and competent persons at this stage. Thus, these senior most students justified their inclusion. Table 4 gives the names of Institutions, number of students, number of questionnaires issued and returns obtained.

(turn over for Table 4)
### TABLE 4 -
**DISTRIBUTION AND RETURN OF QUESTIONNAIRES FROM VARIOUS INSTITUTIONS**

<table>
<thead>
<tr>
<th>INSTITUTIONS</th>
<th>BRANCH OF STUDY</th>
<th>NUMBER OF STUDENTS:</th>
<th>QUESTIONNAIRES</th>
<th>ISSUES RETURNED</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Junior</td>
<td>Senior</td>
<td>Total</td>
</tr>
<tr>
<td>Gujarati College</td>
<td>History</td>
<td>92</td>
<td>71</td>
<td>163</td>
</tr>
<tr>
<td>St. Xavier's College</td>
<td>Hindi</td>
<td>58</td>
<td>46</td>
<td>104</td>
</tr>
<tr>
<td>L. D. Arts School</td>
<td>English</td>
<td>73</td>
<td>50</td>
<td>123</td>
</tr>
<tr>
<td>School of Social Sciences</td>
<td>Economics,</td>
<td>89</td>
<td>95</td>
<td>184</td>
</tr>
<tr>
<td></td>
<td>Sociology &amp;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Politics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>School of Psychology</td>
<td>Psychology</td>
<td>13</td>
<td>10</td>
<td>23</td>
</tr>
<tr>
<td>School of Gujarati Language</td>
<td>Gujarati</td>
<td>38</td>
<td>49</td>
<td>87</td>
</tr>
<tr>
<td>R. J. Institute of Learning</td>
<td>Sanskrit</td>
<td>18</td>
<td>20</td>
<td>38</td>
</tr>
<tr>
<td>A. C. Teachers' College</td>
<td>Education</td>
<td>27</td>
<td>19</td>
<td>46</td>
</tr>
<tr>
<td>H. L. College of Commerce</td>
<td>Commerce</td>
<td>119</td>
<td>84</td>
<td>203</td>
</tr>
<tr>
<td>School of Sciences</td>
<td>Physics</td>
<td>21</td>
<td>13</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>Org. Chemistry</td>
<td>15</td>
<td>17</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Mathematics</td>
<td>20</td>
<td>32</td>
<td>52</td>
</tr>
<tr>
<td>M. G. Science</td>
<td>Geology,</td>
<td>38</td>
<td>32</td>
<td>69</td>
</tr>
<tr>
<td></td>
<td>Zoology,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inorganic &amp;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Physical</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chemistry</td>
<td>38</td>
<td>32</td>
<td>69</td>
</tr>
<tr>
<td>L. D. Engineering College</td>
<td>Engineering</td>
<td>23</td>
<td>5</td>
<td>28</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>624</td>
<td>542</td>
<td>1166</td>
</tr>
</tbody>
</table>

*The census given is for the year 1961 - 1962.*
The data were collected by the investigator herself in a classroom with the help of the professor-in-charge. Instructions about filling up the questionnaires were carefully given to each batch. This took the investigator ten to fifteen minutes. Questionnaires were distributed to all students present in the class. Usually there were about 25 percent absentees in each class on the day, the investigator collected the data. Thus, of a total of 1166 students, the questionnaires were distributed to about 800. It was felt necessary to have approximately 100 to 200 judges for each scale under construction. Since there were five types of questionnaires at this phase, these were randomly distributed among students of each class. The distribution was done in such a manner that each one was responded to by students from varied fields of study.

The pilot study had revealed that the time taken to sort 100 statements in each scale varied from 30 to 45 minutes. Since each item was to be rated on a 7 point scale, this involved considerable effort on the part of the judges. In instances it was found that there was insufficient time to complete this task in the classroom. In such cases, the judges (students) were permitted to take the questionnaires home and
return them completed the following day.

In cases where the students were permitted to complete the sorting at home, considerable difficulty was experienced in getting returns. However, with persistent requests, reminders and visits the required data were collected.

In spite of this effort on the part of the investigator the total number of returns was 530 from among the 800 forms distributed initially. On careful scrutiny of the returned questionnaires, it was found necessary to reject some of these due to their incompleteness or faulty responses.

Consequently, it was decided to restrict the number to a hundred judges, for each scale. Thus, when the collected data on some questionnaires was more than 100, a few were randomly rejected to facilitate analysis. In case the number was less some additional data were accordingly collected. Considerable difficulty was experienced in getting the requisite number of judges for the fifth scale. When all efforts in this direction failed, the investigator was compelled to work with a sample of fifty judges. The total sample covered at this stage was finally 450 judges. Of those approximately
10 percent were girls.

STEP III: At this stage the items were to be scaled on Likert technique. Here, it was decided to tap a sample of undergraduate college students from all available branches of study. Information was collected from the University of all affiliated colleges imparting knowledge at the undergraduate level. It was found that there were over 20 colleges imparting knowledge at the undergraduate level. It being neither necessary nor possible to cover all these colleges, ten were chosen with reference to their situation and fields of study. The next step was to collect a census of students at each of these institutions in each field of study and education level. Unfortunately, these figures were not available in the university for the current year. This was so because records are usually compiled at the end of each academic session. However, accurate figures were available for the previous academic year, it was also confirmed that annual fluctuations were few.

The desired sample representative of all branches of study was 1000. The amount of data to be collected from each institution
was drawn-up in proportion to the numbers enrolled therein.

The sample was randomly selected at each college, either from the college register or by distributing the forms to every second, third or fourth student in the class, depending upon the number present and number required. Random number tables were used wherever possible. The college authorities extended all possible help in this direction. However, to supplement the amount of not returned and rejected questionnaires, the investigator included considerable number of extra subjects to each batch of students. This was found to be justified later on when the useful returns turned out to be below 50 percent from some of the institutions contacted. Others, however, gave returns of about 70 percent or even more.

At each of these institutions, permission was sought from the heads of institutions to collect data from their students in the classroom situation. After having secured an appointment with the authorities and, setting up a randomly selected batch of students to be taken from each class, the investigator herself conducted the proceedings. This consisted of distributing the forms and carefully explaining the instructions.
In some cases, however, the Professor-in-charge was carefully tutored to give the instructions to the students in his institution. In these cases, the teachers themselves volunteered to undertake this work.

Table 5 presents the name of the institutions covered, along with branches of study, number of questionnaires distributed and returns obtained.
### TABLE - 5

**DISTRIBUTION AND RETURN OF QUESTIONNAIRES FROM VARIOUS INSTITUTIONS**

<table>
<thead>
<tr>
<th>INSTITUTION</th>
<th>BRANCH OF STUDY</th>
<th>QUESTIONNAIRES</th>
</tr>
</thead>
<tbody>
<tr>
<td>L.D. Arts College</td>
<td>Arts</td>
<td>180</td>
</tr>
<tr>
<td>H.K. Arts College</td>
<td>Arts</td>
<td>200</td>
</tr>
<tr>
<td>M.G. Science Institute</td>
<td>Science</td>
<td>260</td>
</tr>
<tr>
<td>Gujarat College</td>
<td>Science</td>
<td>230</td>
</tr>
<tr>
<td>L.D. Engineering College</td>
<td>Engineering</td>
<td>200</td>
</tr>
<tr>
<td>L.M. College of Pharmacy</td>
<td>Pharmacy</td>
<td>120</td>
</tr>
<tr>
<td>D.J. Medical College</td>
<td>Medical</td>
<td>100</td>
</tr>
<tr>
<td>A.G. Teachers' College</td>
<td>Education</td>
<td>60</td>
</tr>
<tr>
<td>H.A. College of Commerce</td>
<td>Commerce</td>
<td>200</td>
</tr>
<tr>
<td>L.A. Shah Law College</td>
<td>Law</td>
<td>130</td>
</tr>
<tr>
<td>S Prakash Arts College</td>
<td>Arts</td>
<td>75</td>
</tr>
<tr>
<td>S.L.U. College for Women</td>
<td>Arts</td>
<td>75</td>
</tr>
<tr>
<td>Gujarat Vidyapeeth</td>
<td>Arts</td>
<td>75</td>
</tr>
</tbody>
</table>

**TOTAL:** 1925 1250

*6 colleges subsequently included*
It must be mentioned here that the cooperation of students was very poor, and rejections of incomplete or otherwise useless questionnaires was also heavy. In view of this, it was finally necessary to cover three more colleges to get the required data. This warranted the inclusion of two non-affiliated colleges to the 10 affiliated ones. This gave representation to two women's colleges - one of them affiliated to S. N. D. T. Women's University, Bombay and one independent Institution of Gandhian Philosophy. Thus, data were finally collected from 13 Institutions.

The Institutions subsequently included are shown in Table 5 by asterisks.

The questionnaires being rather lengthy, some of the students were unable to finish them in the classroom. In such cases, as in Step I, they were permitted to fill up the questionnaires at home and return them to the investigator the following day. This phase of data collection was slow, tedious and in some cases very disappointing by way of getting good returns. It took the investigator 3 months to collect the desired data.

Due to the prevalent apathy, indifference and negligence of the student population some 1925 questionnaires had to be
distributed to get returns of 1250. The rejections again were quite heavy. On a scrutiny of the 1250 received back, 450 had to be rejected as being incomplete or incorrectly filled. Thus, 800 questionnaires were finally retained for analysis. Of the total sample, about 30 percent were girls and the rest boys.

STEP IV: Data were finally collected on the constructed scales for testing the reliability and validity. For this purpose again another batch of students had to be selected. So as not to repeat the sample covered earlier, the investigator contacted 4 more Institutions. These were, two Arts, one Science, 1 Commerce College and a few students of Engineering. A sample of 60 was taken from each of these Colleges. The total sample at this stage, after accounting for rejections, amounted to about 200 students. Of these, there were approximately 25 percent girls.

Of these 200 returns obtained, 50 questionnaires were further selected to test the validity of the scales. At this stage, after answering the questionnaires, each subject had to rate himself on a three point continuum. A separate rating sheet
with instructions was provided to them for this purpose.

A group of 10 experts from the field of social sciences was also selected to judge the statements in each scale.

SUMMARY

A detailed account of the procedure adopted for the present study is given in this Chapter. The study is indeed based on rigorous and time consuming techniques which called for extensive reading, discussions with experts and references to previous studies. Before launching the final project, it was necessary to conduct a pilot study with a limited scope. This gave shape to the final study. The procedure called for the use of Edwards and Kilpatrick's scale-discrimination technique. For reasons cited earlier, the Guttman approach had to be omitted. The scales are being standardized on the student-population. Large samples were drawn-up for study at the various stages of work. To ensure comprehensiveness, the students were drawn-up from all branches of study. The reliability and validity aspects of the scales are given due consideration.