

CHAPTER V

CONSTRUCTION OF THE TOOLS

- 5.1. Review of the different techniques of attitude measurement.
- 5.2. Comparative view of different techniques.
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5.1. REVIEW OF THE DIFFERENT TECHNIQUES OF ATTITUDE MEASUREMENT

There are several methods of attitude measurement. Some of them are given in this chapter so as to have an understanding of the comparative utility of these methods. The measurement of attitudes is necessarily indirect and the major area of interest in this chapter lies in reviewing the methods and discussing one followed in this investigation.

Attitudes are measured indirectly as they are 'enduring organisations of perceptual, motivational and emotional processes.'¹ Attitudes are inferred from a person's behaviour and behaviour is guided and directed by attitudes. Attitudes can be marked from the verbal responses of a person and also from his responses in writing.

Various methods of attitude measurement include the methods of direct questioning and observation of overt behaviour. These are quick and convenient measures and can be given to a large number of people at a time. Some of the methods aim at studying the attitudes of a person in a concealed way. There are other less direct measures which include the projective techniques like the Rorschach test, word-association test, drawing and painting test etc.

(a) Method of direct questioning

Edward A.L. says about this method, 'Direct questioning may indeed be satisfactory for some

¹David Krech and S. Crutchfield. Theory and Problems of Social Psychology. (New York, Toronto, London: McGraw Hill Book Company, Inc. 1948), p. 152.

purposes.'² In this method the person is interviewed by direct questions, such as ' Do you always go out for a walk in the evening ?' or ' Do you like to see three dimensional pictures ?' The person may reply 'yes' or 'no.' The person responds to the question according to his/her own feelings for the particular object or issue. There are three types of the persons namely (1) who are favourably inclined towards an object, (2) who are unfavourably inclined towards an object and (3) those who are undecided about it. The investigator has to rely on the responses given by the subjects who may have their real feelings hidden for the object. A person might respond quite opposite to his own feelings due to shyness or thinking that his real responses may not be approved by the society. Sometimes the investigator may collect more information about the subject from his overt

²A.L.Edwards. Techniques of Attitude Scale Construction. (New York: Appleton-Century Croft., Inc., 1957), p.3.

behaviour. The success of the method depends upon the interviewer, interviewee and the wording of the questions.

Advantages and disadvantages of this method.- This method is advantageous as an investigator is able to gather more information than needed, by direct questioning. The investigator may formulate the picture of the interviewee within a short time.

But this method has drawbacks also. Persons who possess nervous temperament will not respond frankly to the interviewer. These persons may be unaware of their feelings towards the object or they may possess negative attitude or they may respond incorrectly through fear. Apparently they show shyness and do not express their real feelings. Thus method of direct questioning may fail with them. Some persons have mixed feelings and this is the most difficult situation to be tackled by this method.

(b) Method of direct observation of behaviour

In this method the stress is put entirely on the observation of a person's behaviour, and on the method of questioning. Apparently this is a good method for knowing one's attitudes but it has its

limitations.

Advantages and disadvantages of the method.- By this method an individual can be assigned to his respective class. The category of the person can be known whether he belongs to average, below average or above average group with respect to other organismic variables.

The disadvantages are (1) An investigator has to observe so many persons and that is perhaps impracticable for him to observe each person minutely. (2) An investigator has to wait for the desired interaction between the person and the object of attitude. (3) Sometimes these forced interactions may not reveal the true feelings of the person, it may conceal the true feelings.

(c) Measurement by scales

Scaling techniques are the most carefully designed, most prominent and most widely used methods of attitude measurement. In this method a person is to give his reaction verbally to a carefully standardized items. These items are the opinions that a person can hold with respect to a particular object. The pattern of

reactions to the items gives a way of informing attitudes of that person. The person judges the acceptability or unacceptability of a particular item. According to Krech and Crutchfield, ' Judgments are immediate cognitive processes which are governed by predispositions of the person which we call beliefs and attitudes.'³

The underlying predispositions come to light by the summation of judgments. In scaling techniques a large number of statements is required and they should be standardised after having taken into consideration certain criteria e.g. the items must have diagnostic values, they must discriminate the persons having different attitudes. They should be unambiguous and have some meaning and be related to the attitudes measured.

Limitations.- There are certain special factors which reduce the discriminability of an item. These

³Krech David and S.Crutchfield. Theory and Problems of Social Psychology. (New York,Toronto,London:McGraw Hill Book Company,Inc.,1948), p.211.

can be unique meanings assigned to it by different people or accidental misunderstandings or other such random variations. These irrelevant errors can be removed if a larger number of items is selected.

The two most popular scaling techniques which are used by the most of the investigators for the construction of attitude scales are Thurstone's and Likert's techniques.

(c.1.) Thurstone's method of equal appearing intervals.-- This is the most widely used method of constructing attitude scales, developed by Thurstone and his colleagues. The most outstanding feature of this method is the use of judges for rating the statements.

Procedure.-- A large number of statements expressing positive or negative attitude towards the psychological object is required. These statements can be obtained from the persons interested in the object selected, or from the literature related to the object or from the writings of the students about that object. These statements should then be rated by the judges. For the rating process each

statement should be reproduced on a separate slip of a card. The judges should be instructed to rate the statements on an eleven point scale ranging from the most unfavourable to most favourable, through neutral. These statements should be rated according to their intensity and not according to the judges' opinions and agreement with the statements.

It is assumed here that the work done by the judges is honest. After the completion of the rating process, variability amongst the judges can be checked. If all the statements are put under their proper category and the judges agree, it can be said that there is less variability. In other words all the judges are in agreement. But if the judges have placed the statements scattered on the whole continuum, it can be said that there may be ambiguity in the statement or some attitudinal factor might have played its role. For judging the variability, standard deviation would serve as an adequate measure. The index which is actually used is one half the distance between the 25th and 75th percentile of the judges' ratings.

This is named as 'Q' value of the particular statement. Statements with high 'Q' values suggest the disagreement amongst the judges. These statements should not be included in the scale.

The last step in this method is the selection of the statements for the final scale. The statements must be spread evenly on the whole continuum. To check this point, the median intensity score or a scale value for each statement should be determined. The scale position for each item is then considered to be median intensity judgment. The final attitude scale may consist of 20 to 22 statements which are evenly spread over the whole intensity range and of low 'Q' values.

Arrangement of the statements may be done at random in the final form. This final form can then be administered to the subjects. The subjects have to check the statements according to the instructions given. The score of each subject for each scale is the median intensity or the middle scale value of the statements, which are checked, e.g. one subject has marked only three statements having intensity

indices of 6.5, 7.0 and 7.5 ; his score will be 7.0. This value can be utilized for further interpretations.

Thurstone himself constructed a number of attitude scales based on this method. Amongst them there are scales for measuring the opinions towards the object, as towards the war, the church, capital, punishment, evolution, negro, birth control, censorship and the Chinese. This scale can be used to measure attitudes towards a variety of objects.

This method is an application of the psychological techniques to the problem of attitude scaling. This is an attempt to develop a 'rational' scale based on psychologically defined units.

Advantages and disadvantages.- This method is very economical and a common sense type of instrument used widely during the last twenty five years. The use of judges to estimate the intensity of attitude is both a strong and weak point of this method. (The scale positions have a rational meaning is an advantage). Good agreement of judges tells us something directly about the respondent.

A politically weak point is the absence of any direct procedure for determining whether or not there is only a single attitude involved in the statements. However, this is a lengthy method for purifying the scale.

c.2. The Method of paired comparisons.- This method is also formulated by Thurstone. This is quite a different method for determining scale values. This method is based on Thurstone's law of comparative judgment (1920). In this method comparative judgments are to be obtained for each pair of statements. Each subject has to make $(n - 1)/2$ comparative judgments. Thus 20 statements will require 190 comparative judgments. Thus it is difficult to obtain the subjects who will give enough time for the work. Thurstone also states that it is not always the case that the given response evokes the same discrimination.

Advantages and disadvantages.- This method is advantageous in comparison with the rank order method of scaling, as it forces the judge to compare each statement with every other and this may be conducive to greater accuracy. This method has an advantage over

the method of equal appearing intervals which should be given consideration when the attitudes of the judges might be a distorting factor. This method is useful in scaling statements where a small number of statements is to be scaled. This is also useful for the quantitative investigation of all kinds of values and subjective experiences.

A major disadvantage of this method would be determined by single scale values and therefore would probably not be so reliable as the median method. The great disadvantage of this method is that it is a tedious and time consuming method.

c.3. Likert Technique. - An entirely different method of constructing attitude scales was devised by Likert in 1932. This method which has an aim similar to that of other scaling methods is to place an individual at a specified point on a continuum ranging from favourable to unfavourable attitudes. The nature of continuum which Likert scale scores represent, is however, quite different from that represented, by Thurstone's equal appearing interval scores.

This method also requires a large number of items ranging from extremely favourable to extremely unfavourable. Statements of neutral nature are not included here. The scoring method here depends upon classifying every item as favourable or unfavourable. In this method there is no use of judges. Thus the items are represented to a group of subjects in an actual trial form. The responses of the subjects are then analysed item by item for internal consistency. Those items which are responded to, favourably, by individuals who as a group do not respond to most other items favourably are discarded, as they are not tapping the same attitude as the other items.

If the scale construction is being successful, there emerges a list of items with high internal consistency and high split-half reliability. The scoring on a Likert scale is the number of items multiplied by five and the minimum possible score is the number of items multiplied by one e.g. the scale consists of 20 items. One subject has responded all the 20 items on a favourable continuum. His score would be $20 \times 5 = 100$ and the other

subject has scored only 20, which means $20 \times 1 = 20$ i.e. on an unfavourable continuum. All the items are then analysed by one of the item analysis procedures. Thus the final scale consists of 20 to 25 items from the total list which expresses the greatest discrimination. These items are used, with the same five-response categories and scoring should be done in the same way as in Thurstone's method.

Likert scores do not have absolute significance. The interpretation of the attitude score on an equal-appearing interval scale can be made independently of the distribution of scores for a particular group of subjects. In this technique, the scores are integrated, in terms of where the individual falls, in relation to total distribution of scores. This is the way the scores are interpreted in most of the psychological tests.

Advantages and disadvantages. - This method gives more information than the Thurstone's method. The subject responds to each item in Likert method while in Thurstone's method, the subject either rejects or accepts an item. Therefore specific items are

available for individual analysis of their content. Thurstone's technique cannot serve this dual function.

The items selected in a Likert scale do not represent different degrees of favourable or unfavourable attitude as it is so in Thurstone's technique. All the items are considered equivalent in Likert technique. A Likert scale position is thus influenced by the number or range of favourable and unfavourable responses and by their intensity.

Both the methods - Likert and Thurstone are useful for group purposes such as comparison of mean attitude scores of two or more groups on the same psychological objects measuring change of attitudes to a group due to experimental variables such as motion picture or for correlating attitudes, scores on personality inventory or intelligence tests.

(d) Less direct measures of attitudes

The method and scaling techniques described above are indirect methods. Attitude is inferred from the opinions in all the techniques described, but there is a varying degree of indirectness. Thus

the technique given below is more indirect than the previous ones. Remmers describes them as ' the less direct measures of attitudes.'⁴

It is indicated in the scaling techniques that there is the possibility of distortion of answers which are given in the questionnaire. To overcome that difficulty projective tests are sometimes used to study the attitudes such as parental attitude, religious attitude, attitude towards a group of persons etc. Here the individual has no chance to distort the data. Some of the projective techniques used are the techniques like the word-association test, sentence completion test, Rorschach test, the Thematic apperception test, drawings, paintings and play. Drawings, paintings and play are used where small children are the subjects.

(e) Measurement by ratings

In this method the attitude of a person is based on the ratings of the judges. There may be

⁴H.H.Remmers. Introduction to Opinions and Attitude Measurement, (New York:Harper and Brothers,Publishers, 1954), p.197.

one or more judges. The judges are experts like the clinician or an interviewer but before the judge can rate the person's opinion and attitudes, he must have data from various sources to serve as the basis for his ratings. The sources of information are (1) the observation of the overt behaviour of a person in relation to the object of study; (2) the verbal behaviour of the persons, and (3) the responses to the projective tests.

(f) Self rating method of attitudes

This method occupies a place by itself. In this method the individual himself is the judge. His job is to place himself at a point which represents his position on the dimension being measured. This is the easiest method of all but it lacks in objectivity.

5.2. COMPARATIVE VIEW OF THE DIFFERENT TECHNIQUES

Looking to the advantages and disadvantages of the techniques, the investigator has the following observations to make :-

(1) The technique of paired comparisons requires a large number of judges and it is a laborious, time-consuming technique if many items are to be compared, however, it does seem to yield more stable results

than the others.

(2) In the technique suggested by Likert, scores obtained from attitude scales give little insight into cause and effect relationship. Moreover, the scores are integrated in terms of where the individual falls in relation to total distribution of such scores. The purpose of investigation is obvious to the subject, and there are more chances of getting dishonest answers from the subjects.

(3) The technique of rating scales as compared with their nearest rivals, paired comparisons and rank order, the rating scale methods have certain definite advantages. Rating requires less time than paired comparisons. The procedure is more interesting to the observers. It can be used with a large number of stimuli. This technique is condemned because of the many sources of bias and errors to which they are vulnerable.

(4) The methods of direct questioning and direct observation of behaviour are also defective as there are very few chances of getting reliable answers from the persons of different temperament.

(5) Self inventory method is useful in school clinics and industry when a subject is able and willing to co-operate, it gives fairly reliable indications of interests and attitudes. Inventory is easy to score with multiple choice methods. It cannot be used with non-cooperative children or adults.

From the above discussion, it can be seen that each technique has its own limitations. Several studies are tried to establish the comparative merits of the Thurstone's technique, for the construction of a scale. But the main drawback is that Likert type scale requires about half the time of that for the Thurstone's scale.

The factors which make for invalid self report are equally present in both the scales.

The Likert technique permits responses set to influence the scores which might lower the validity where the directions for the Thurstone's scale requires one to check, say the six statements with which he most agrees. No response set affects the score.

In the equal appearing interval scale, the attitude score obtained by a single subject has an absolute interpretation. An attitude score is taken as the median of the scale values of the statements with which the subject agrees. Thus the interpretation of an attitude score on an equal appearing interval scale can be made independently of the entire distribution of the scores for a particular group of subjects.

The relative effectiveness of various methods of comparison has rarely been studied but 'Hevner (1930) scaled samples of handwriting by three methods, paired comparison, ranking and equal appearing intervals.'⁵ The findings of her study were, the scale values of the two methods - paired comparison and ranking, were similar but different from the method of equal appearing intervals.

'Ferguson ' (in 1939) studied the above three techniques and he reported that there was a close

⁵Cited by Edward B.Green. Measurement of Human Behaviour. (New York: The Odyssey Press,1952),p.625.

agreement among the scale values. He finally concluded that the equal appearing interval method was superior, in consideration of economy and accuracy. In the method of equal appearing intervals, the scale values are not affected by the inclusion or exclusion of other items.

Amongst the techniques discussed, Thurstone's technique of 'equal appearing intervals' is selected for the present investigation. This technique though laborious, certainly possesses an advantage over the other techniques. The importance of the technique selected, the actual procedure of the construction of attitude scales and also the questionnaires are given here.

5.3. REASONS FOR THE SELECTION OF THE TECHNIQUE

Different persons have studied this technique to have comparative idea. Some persons think that the Likert's technique is better than the Thurstone's one while others believe it to be just the reverse.

Thurstone's technique of 'equal appearing intervals' was selected out of the other techniques. The reasons for the selection of the technique are

(1) It is a widely used method for obtaining scale values for a large number of statements. (2) The use of judges to determine the points on the attitude continuum is the outstanding feature, (3) The scale is an economical instrument which has been used during the last 25 years. (4) It is advantageous that the scale positions have rational meaning which would be difficult to obtain by any other method, (5) If the judges are in good agreement, it tells us directly about the respondent. (6) This method assumes that the intensity of the judgements is independent of the judges' own attitudes (7) This method is easier for younger or less literate children as they have not to make fine verbal discriminations of their feelings for various issues. Thus the most important point in this method is the use of judges which is helpful in locating the neutral point on the attitude scale. Moreover, it is useful to locate the inclination of the individual on either sides of the neutral point.

Having taken into account all the arguments for the selection of the Thurstone's technique of

equal appearing intervals, the investigator proceeded further with the actual procedure of preparing the attitude scales and questionnaires. The selection of the areas for the construction of the attitude scales are as follows:-

- (1) Education and Educational Programmes
- (2) School
- (3) Teachers
- (4) Home
- (5) Politics
- (6) Social and democratic life of the pupil
in the school.

Attitude scales are constructed for the first four areas and attitude questionnaires are prepared for the last two areas.

5.4. PROCEDURE FOR THE CONSTRUCTION OF ATTITUDE SCALES

Thurstone's equal appearing intervals technique proceeds with the following steps to construct an attitude scale.

- (a) Collection of the items
- (b) Factors under each area
- (c) Editing the items

(d) Selection of the group of judges

(e) Rating

(f) Scale values

(g) Analysis of the ratings

(h) Selection of the Final Scale.

(a) Collection of the items. - While collecting the items for the attitude scale in this method, certain informal criteria suggested by Wang, Thurstone, Chave, Likert, Bird, Edwards and Kilpatrick are considered. They are as follows:-

(1) Criteria

(1) Avoid statements that refer to the past rather than to the present.

(2) Avoid statements that are factual or capable of being interpreted as factual.

(3) Avoid statements that may be interpreted in more than one way.

(4) Avoid statements that are irrelevant to the psychological object under consideration.

(5) Avoid statements that are likely to be endorsed by almost everyone and by almost none.

- (6) Select statements that are believed to cover the entire range of the affective scale of interest.
- (7) Keep the language of statements simple, clear and direct.
- (8) Statements should be short rarely exceeding 20 words.
- (9) Each statement should contain only one thought.
- (10) Statements containing universals, such as all, always, none, never, often introduce ambiguity and they should be avoided.
- (11) Words such as only, just, merely and others of similar nature should be used with care and moderation in writing statements.
- (12) Whenever possible, statements should be in the form of simple sentence rather than in the form of compound or complex sentences.
- (13) Avoid the use of words that may not be

understood by those who are to be given
the completed scale.

(14) Avoid the use of double negatives.⁶

Considering the above criteria the investigator collected a large pool of statements from the newspaper cuttings, magazines and editorials, a few statements were collected from the pupils' writings on the particular issue, and the others from the daily experiences. Care was taken while selecting the statements that they should range along the entire continuum from extreme unfavourableness through neutrality to extreme favourableness. The statements were prepared on each behaviour area in due consideration of the sub factors related to that area.

(b) Sub factors under each area:

First Scale: Pupils' attitude towards
Education and educational programme. This area is

⁶ A.L. Edwards. Techniques of Attitude Scale Construction. (New York: Appleton-Century Crofts, Inc. 1957), p.13-14.

related to educational system, syllabus, examinations, text-books etc. 65 statements were devised for the first scale.

Second scale: Pupils' attitude towards school. This area consists of school building, school atmosphere, facilities in general and economic status of the school. For this scale 61 statements were devised.

Third Scale: Pupils' attitude towards teachers. This scale includes the factors such as teacher's personality, teaching procedures, knowledge of the teacher, curricular activities, sincerity towards the teaching profession and economic condition of the teacher. 74 statements were devised for this scale.

Fourth scale: Pupils' attitude towards home. Home is related to the sub-factors such as home atmosphere, family members, economic condition of the home, facilities in the home and place of punishment. 65 statements were devised for this scale.

Fifth area: The attitude questionnaire on Politics. Politics in general includes political parties, students' unions, present government, economic and social inequality in the country and caste differences.

Sixth area: The questionnaire to judge the students' democratic and social life in the school. This questionnaire consists of the factors such as participation in games, cultural programmes, school trips, students' unions, teachers' attitude and use of leisure hours.

45 items were devised for the first questionnaire and 24 for the second.

(c) Editing the items:

Each statement was then edited on a separate slip of a card. There were as many slips as there were statements for all the four attitude scales.

(d) Selection of the judges:

Judges were required for the rating purpose. How many judges should be selected ? Thurstone, Chave, Ferguson, Edwards, Kenny and several others tried the experiments with a large number of judges. They received high correlations and thus concluded,

'a relatively small number of judges can be used to obtain reliable scale values for the statements using the method of ' equal appearing intervals.' It is obvious that reducing the number of judges from 300

to 50 will also reduce the amount of time and work involved in obtaining judgments and subsequent scale values for the statements.⁷

According to the views of the above experimenters, 50 judges were selected for the present work. For selecting the judges, the only criterion that was kept in mind, was, they must be in know of their duty and the psychological object and should do their duty carefully and with exactness. The judges were teachers, lecturers and headmasters.

(e) Rating the statements:

All the statements were edited on separate slips of cards. These slips were given to the judges for rating purpose. The following instructions were given to the judges:

1. Please take the slips of one scale at a time.
2. All the slips consist of the statements of three types. Most favourable, most unfavourable and neutral, and certain others

⁷A.L.Edwards. Techniques of Attitude Scale Construction, (New York: Appleton Century, Crofts, Inc., 1957), pp.94-95.

coming in between the above three types,
on the entire range of the continuum.

3. Rating is to be done on 13 point scale.

4. 13 covers with labels 0 to 12 are given.

Arrange the covers according to their number.

5. Place each of the slip on the respective
cover which expresses its real position
on the continuum.

6. '0' represents most unfavourable attitude
towards an object, '6' represents neutral
attitude and '12' represents most favourable
attitude towards an object. The investigator
defined only three categories as others
were of equal appearing intervals. Thus
covers numbered 5,4,3,2,1 and 0 express
varying degrees of unfavourableness and
covers numbered 7,8,9,10,11,12 express
varying degrees of favourableness. The
continuum was as under:

0	6	12
Most Unfavourable	Neutral	Most favourable

Each judge was asked to judge the degree of

favourableness or unfavourableness of the students. All the four scales were to be rated in the same manner by the same judges. Thurstone has suggested 11 point scale but in the present case 13 point scale was prepared. According to J.P.Guilford, ' No rater would make use of end categories. Some raters do use them while judging the statements. They may come across one, that is more extreme stimuli than they have placed in the last category. If they have no more last category, they are forced to place that statement in the last category available, that they know, is not equal. Thus the end categories serve as extensions that are needed. ' (2) The terminal categories serve as 'anchors' for the whole scale. There is the general tendency of the judges to avoid terminal categories so the addition of such a category at either end serves to spread the entire distribution of ratings more in the direction of that category. This way one can achieve greater dispersion.'⁸

⁸ J.P.Guilford. Psychometric Methods. (New York, Toronto, London: McGraw Hill Book Company, Inc., 1954), pp.264-265.

In the present work, the end categories '0' and '12' would serve as anchors. If these two categories were not given, the raters might have neglected the categories '1' and '11' and the entire range of the continuum would have been shortened. The investigator wanted to prepare an affective scale of 11 points and that was why the two more end categories were provided. If the end categories were not provided it would have been only a 9 point scales. The judges were also instructed to rate the statements not according to their own agreement or disagreement but according to the real position that the statement represented on the entire continuum.

The ratings done by the judges were noted in the columns prepared. After analysis, it was found that the work of 10 judges was not satisfactory and so the ratings done by them were rejected.

(f) Assigning the scale values

The ratings of all the judges were recorded for each statement. The chart was prepared as under:

Statement: ' I like to go to the school. '

No. of Judges	Categories												
	0	1	2	3	4	5	6	7	8	9	10	11	12
1													
2													
3													

Thus for each statement a separate chart was prepared and the frequencies were totalled in each interval, for each statement. From the frequencies, the median intensity score or the scale value was found out with the help of the 'formula'⁹ given below:

$$S = L + \left(\frac{.50 - \sum pb}{P_w} \right) i$$

where

S = Scale value of the statement.

L = Lower limit of the interval in which the median falls.

$\sum pb$ = The sum of the proportions below the interval in which the median falls.

⁹A.L.Edward. Techniques of Attitude Scale Construction, (New York:Appleton-Century-Crofts, Inc., 1957), p.87.

p_w = Proportions within the interval in which the median falls.

i = Width of the interval.

Thus the median value for each statement was calculated for all the four scales. The next step was to compute the indices of variability for each statement.

(g) Measures of Variability

Thurstone and Chave used the interquartile range of 'Q' as a measure of the variation of the distribution of judgments for a given statement. The interquartile range contains the middle 50 percent of the judgments. To determine the value of Q, we need to find two other measures - the 75th centile and 25th centile. 25th and 75th centiles can be found out with the help of the following formula :

$$C_{25} = L + \frac{(.25 - \sum pb)}{p_w} i \text{ and}$$

$$C_{75} = L + \frac{(.75 - \sum pb)}{p_w} i$$

The terms used in the above two formulae are according to the terms used in scale values.

Thus :

$$Q = C_{75} - C_{25}^{10}$$

Thus with the help of the above formula, 'Q' value of each statement was found out. When all the judges are in good agreement in placing the statements according to their proper categories, the Q values would be small. The Q values would be high, if the judges disagree in their ratings. High Q values indicate ambiguity of the statement or some other defect according to the criteria given. The interquartile range actually used is one half the distance the 25th and 75th percentile of the judges' ratings. Thus it is a measure of variation of the distribution of judgments for a given statement. It contains the middle 50 percent of the judgments.

(h) Final Scale

To select the statements for the final scale was the last item in the programme of measurement of

¹⁰A.L.Edward. Techniques of Attitude Scale Construction, (New York: Appleton-Century-Crofts, Inc., 1957), pp.88-89.

attitudes. Only those statements which had relatively low interjudge variability were selected. Another point that was kept in view at the time of the selection of the statements was the uniform spread out of the scale values along the entire range. Other statements were rejected as they were not included under the criteria given.

Thus the final scales for all the four areas were prepared, so as to have 20 to 22 statements, in each scale.

The statements were arranged at random in all the four scales. The scales were ready for the final administration.

5.5. PROCEDURE FOR THE ATTITUDE QUESTIONNAIRES

The investigator selected two more areas for the preparation of attitude questionnaires. The areas were (1) politics and factors related to it and (2) pupil's social and democratic life in the school. These areas may affect the attitudes of the pupils in the problem of discipline.

The method used for preparing the attitude questionnaire was not of a special type. It was a

simple method of 'yes', 'no' responses. This method of attitude questionnaire was widely used to measure attitudes, before the Thurstone's technique of 'equal appearing intervals scales' gained popularity. Attitude questionnaires are the collection of statements or questions to which the subject responds.

All statements have both types of responses but in some, 'yes' response corresponds to favourable attitude towards the object while in others, 'no' corresponds to favourable attitude.

The statements of the questionnaires were not scaled as to intensify or degree of favourableness or unfavourableness. Here a measure of degree was obtained by adding all the responses 'yes' or 'no' which indicated the particular attitude. The greater the number of statements of one type with which a person agrees or disagrees, the more favourable is his attitude. ' In most other attitude questionnaires, the responses which indicated a given attitude were determined by consultation with authorities on the

various issues presented.¹¹

The two questionnaires were then prepared on the areas selected. Both the questionnaires consisted of simple type and multiple choice type of questions. The questions and statements were discussed with the group of headmasters and teachers, and only those questions which were of good agreement amongst the group were retained. The response for each statement or a question was also decided with the help of the group. It was decided that the response showing the favourable attitude whether it may be 'yes' or 'no' would be given 2 marks and those showing unfavourable attitude would be given 1 mark for each response.

All the tools were then ready with the assembly of four scales and two questionnaires.

5.6. RELIABILITY OF THE ATTITUDE SCALES

The next step to find out, was the reliability of the attitude scales.

¹¹H.H.Remmers. Introduction to Opinion and Attitude Measurement, (New York: Harper and Brothers, Publishers, 1954), p.388.

The most common procedure for finding out the reliability of attitude scales is to have parallel forms but in the present case, no such forms were prepared. The most straight forward way of testing the reliability of attitude scales in the present investigation was to resort to test-retest technique. The more nearly everyone gets the same score each time, he responds to it, the greater the reliability of the scale is said to be.

A statistical device known as coefficient of correlation enables us to calculate just how closely people tend to keep the same positions relative to each other, when they have taken the scale more than once. The more nearly a test-retest coefficient of correlation approaches this figure, the more reliable the scale is. Many scales have been found to have reliabilities in the neighbourhood of 0.95. This is sufficiently close to 1.0 to be considered highly reliable.

There are weaknesses in this test of reliability, However individuals may remember their responses and try to be consistent with their former performance,

this would produce a spuriously high coefficient of reliability. This reliability can also turn low, since some individuals may have had experiences that actually changed their attitudes between the first and second administration of the scales.

These low reliabilities probably reflect a genuine change in attitude over time. They do not represent a fair test of reliabilities of the attitude scales as such. The only remedy is to reduce the time interval between the two scales to zero. This is not impossible and the method for doing this is the one most commonly used for measuring reliability. This is known as split-half technique for measuring reliability. Each method has its own limitations.

The reliability of the present attitude scales was determined by test-retest method. The split half technique was not used in the present work because of the following considerations :

1. The items were not arranged according to their difficulty level.

2. The number of items in the scale was rather small.
3. All the items were not to be checked by the subjects.

Thus the test-retest technique for finding the reliability of the scales was applied in the present work. The test was readministered to the same subjects. The time interval between the two administrations was two months. The subjects taken were only 130 in number. The representative score of all the scales at both the administrations for all the subjects was found out. When the median method of scoring is used the test-retest reliability coefficient can be obtained by having the same group of subjects. Scores of both the administrations can then be correlated. The following table shows the reliability of all the four scales.

TABLE NO. A.1.

THE RELIABILITIES OF ALL THE SCALES
BY THE TEST RETEST METHOD

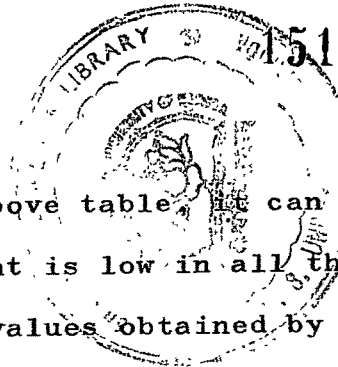
Scale	Reliability Coefficient
1.Education	0.61
2.School	-.49
3.Teachers	-.625
4.Home	-.50

5.7. DISCUSSION OF THE RESULTS

Looking to the values in the above table, it can be said that the reliability coefficient is low in all the four scales in comparison with the values obtained by other investigators previously. The reliability coefficient in all the four scales are ranging from 0.49 to .625 while the previous investigators have obtained the values 0.8 to 0.9.

But the investigators such as Guilford and Furguson believe that one can tolerate very low reliability for research purpose.

Here in the present investigation the investigator obtained the low reliability coefficients because (1) the investigator has not prepared the parallel forms, (2) test-retest technique is used and (3) the time interval between the two administrations is nearly two months. Other investigators have used parallel forms, and split half technique for finding out the reliability so there was no question of time interval between the two administrations. In the present case the subjects might have changed their



attitude and might have given different answers.

In the first and the third scale i.e. attitude towards Education and teachers, the investigator obtained the reliability coefficient is about 0.6 and towards school and home it is about 0.5. This might have happened due to change in pupils' attitudes.

'Kuder Richardson estimates the reliability coefficient 0.87 and second sample .88 on parallel forms by split half technique. The reliability coefficients are comparable to those usually reported for attitude scales scored by the median method.'¹²

'Ferguson (1939) has quoted Thurstone as reporting the reliabilities of scales constructed by the method of equal appearing intervals under his direction as being all over 0.8. Most of them being over .9' (p.670). 'Ferguson adds that in his own studies he has found reliabilities of equal appearing interval scales ranging from 0.52 to .80 for the 20 item forms

¹² A.L. Edwards. Techniques of Attitudes Scale Construction, (New York: Appleton Century Crofts, Inc., 1957), p.49.

and from .68 to .89 for the 40 item forms.¹³

According to Guilford, there are no hard and fast rules for how high reliability coefficients should be. For research purpose one can tolerate much lower reliability than one can for practical purposes of diagnosis and prediction. We are frequently faced with the choice of making the best of what reliability we can get even though it may be of the order of only .50 or of going without the use of the test at all. For some purposes a test of low reliability adds enough to prediction to justify its use particularly when used in a battery along with other tests.

5.8. VALIDITY OF THE SCALES

Attitude tests have been severely criticized for their inadequate validity. An attitude test is based on verbal expressions which seldom gives a true picture. Lapiere's findings on verbal attitudes and

13. Cited by A.L. Edwards. Techniques of Attitude Scale Construction, (New York : Appleton Century Crofts, Inc., 1957), p.49.

behaviours are negative.

Cronbach believes that attitude tests are most likely to be valid when the subject has no motive to conceal his attitude. Validity of an attitude scale can to some extent be measured by comparing the expressed opinions with the actual behaviour through continued observation. In the present work the investigator found it impossible to carry out the process of observation of a good sample of respondents under the limited facility and time at the disposal. Casual observation will surely not help in finding out the validity.

The attitude scales based on Thurstone's technique differ from all other common type of psychological tests like intelligence and achievement tests etc. The fact that, in attitude scales each item has a definite scale value attached to it in proportion to the degree of favourable attitude it measures.

The validation studies of attitude scales have been carried out long after the scales have been constructed. Most of the psychometricians concerned with the construction of attitude scales have in

majority of the cases depended on the face validity of the items. Face validity does not require any statistical proofs e.g. if a person says, ' I hate teacher 'X' '. This clearly represents an unfavourable attitude towards teacher X. Face validity is alright for the items on extreme ends of an attitude continuum but for other statements it is very difficult to gauge the validity. Therefore it is suggested to calculate the validity of a psychological tool in terms of coefficient of correlation against some reliable criterion wherever possible.

In the present test validity of the test was found out at the time of deciding the scale values of the statements. The investigator was not keen to standardise the tests and thus this is sufficient for the purpose of investigation.

5.9. SUMMARY

This chapter represents a bird's eye view of the various techniques of attitude measurement alongwith a comparative view of the techniques. From among the various techniques, Thurstone's technique of equal

appearing intervals was determined to be the most adequate for the purpose of this study. Reasons for the selection of this technique have been fully discussed. This chapter includes the detailed procedure of the construction of the attitude scales and questionnaires. It also discusses the process of finding the reliability of the tools.

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CHAPTER V

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