CHAPTER –III

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3.1 Introduction:

In the previous chapter, researcher has given a brief account of the related literature of concern study.

This chapter deals with the procedure for the present research work. Researcher has described the various steps taken for the standardization of scale and also mentioned sample selection procedure, statistical formulae for the analysis of data.

The main stages of this research study were,

1) To standardize the Emotional Intelligence Scale (EIS) for secondary school teachers.
2) To study the emotional intelligence in relation with gender, age, caste category, faculty and teaching experience of secondary school teachers.

3.2 Research method selected for present study:

For the present study, survey method was selected.

Survey method is concerned with the present and attempts to determine the status of the phenomenon under investigation. Survey research in education involves the collection of information from members of groups of associated with the educational process and the analysis of this information to illuminate important educational issues.

Kerlinger, F. (1973) stated that, “Survey research focuses on the vital facts of people and their beliefs, opinions, attitudes, motivations and behaviors.” According to Traverse (1964) “Survey of behavioral phenomenon within a school system may be concerned with the behavior of pupils, teachers, parents, superintendents, school boards or other persons connected with the educational process. Such survey may be concerned with verbal behavior, such as the expression of opinion or desires or non verbal behaviors.”

The researcher had selected the same method because of following points,

1) The main objective of present study was to standardize the emotional intelligence scale for secondary school teachers.
2) The present study was completely focused on selecting and observing variable i.e emotional intelligence which already existed.
3) It also focused on to describe the status of phenomena at particular time i.e. description of status of emotional intelligence of secondary school teachers.

4) The study was concerned with representative sample of male and female secondary school teachers of Satara District (Maharashtra State). Considering the concerned representative sample, data regarding status of emotional intelligence was collected from relatively large numbers of individual cases. From these data, inferences about population of secondary school teachers were drawn.

Considering these points, the present problem comes under survey method i.e. survey of behavioral phenomenon.

Emotional intelligence is being a characteristic of human behavior and researcher had studied a representative sample of secondary school teachers and data was gathered from relatively large number of cases, behavioral survey method is appropriate. Hence the researcher selected the said method.

3.3 Procedure of Scale Construction and standardization:

For Construction and standardization of emotional intelligence scale for secondary school teachers the researcher had taken following points into account:

The measuring instruments are tests, scale, inventory etc. but these are commonly referred as the test. Almost all psychological tests are constructed and standardized in similar way. The only differences lie in the purpose of the test and in the content of items.

According to Chadha, N.K.(1996), “The construction of a test and it’s standardization are two different but related concepts. In test construction, after item analysis, the items are finally chosen, whereas in standardization the chosen items are administered on large group and then standard norms are prepared according to the results.” So test construction is one of the steps in standardization.

Chadha, N.K.(1996), stated that generally, for all psychological and educational test construction the following five basic steps are used,

1) Planning the test
2) Preparing the preliminary draft of the test
3) Trying out the preliminary draft of the test
4) Evaluating the test
5) Construction of the final draft of the test
Also, Lowenthal, K.M.(2003), suggested following steps in the scale construction.

1) Defining what you want to measure
2) Collecting items
   - How many items
   - Sources of items
   - Checking the items
3) Producing the preliminary questionnaire or test
   - Demographic and other data
   - Response format
4) Deciding on a sample
5) Recruiting method
6) Testing
7) Preliminary analysis
8) Selecting reliable items
9) Final scale
10) Reliability
11) Validity
12) Norms

The following discussion of scale construction will be presented in the order of steps suggested above with modification and addition made as necessary.

The following steps were taken by the researcher for construction and standardization of emotional intelligence scale for secondary school teachers.

1) Planning of the scale
2) Preparing the preliminary draft
   i) Defining what to measure
   ii) Number of items
   iii) Sources of items
   iv) Writing items
   v) Item evaluation
      a) Search of Judges(Experts)
      b) Instruction to Judges
3.3.1 Planning of the scale:

The initial step in the construction of the scale was the preparation of the plan. According to Chadha, N.K.(1996), “For this purpose the subject, medium, administration, procedure, sample, population etc. are established and age, sex, educational qualification, mother tongue, rural/urban, social-economic status and other environmental factors must be considered. Besides the format of the test (paper and pencil or performance, verbal or non-verbal), its medium, the way it has to be administered (individual, group or both) the amount of money and time involved will also be high lightened.”

The plan will vary depending upon the type of test that the test constructor is preparing. Every plan should contain a statement of the purpose or purposes of the test and some outline of the content of the test.

The purpose of the plan is to present the rationale for the test and to guide the preparation and evaluation of items to be used in the test. The purpose also serves as a general outline for a user.
So the researchers planned the objective, content, population and procedure to be followed in scale construction and standardization.

The main objective of the study was to construct and standardize the emotional intelligence scale for secondary school teachers. And the above given procedure was followed by the researcher to construction and standardization of emotional intelligence scale.

The schedule of construction and standardization of emotional intelligence scale were done as given in Table-1

**TABLE -1**

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Time Span</th>
<th>Repertoire</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>June 2006 to Sept 2006</td>
<td>Study the Goleman’s emotional intelligence and analyzing the competencies</td>
</tr>
<tr>
<td>2</td>
<td>Oct 2006 to March 2007</td>
<td>Preparation of items</td>
</tr>
<tr>
<td>3</td>
<td>April 2007 to July 2007</td>
<td>Checking the items by the judges(Experts)</td>
</tr>
<tr>
<td>4</td>
<td>August 2007 TO Feb 2008</td>
<td>Preparation of preliminary draft and administration</td>
</tr>
<tr>
<td>5</td>
<td>March 2008 to July 2008</td>
<td>Item Analysis</td>
</tr>
<tr>
<td>6</td>
<td>August 2008 to Jan 2009</td>
<td>Preparation of final draft and administration</td>
</tr>
<tr>
<td>7</td>
<td>February 2009 to March 2009</td>
<td>Establishing the reliability, validity and norms.</td>
</tr>
</tbody>
</table>

The above plan was implemented.

**3.3.2 Preparing the preliminary draft:**

In this stage following steps were taken.

**3.3.2.1 Defining what to measure.**

Lowenthal, K.M.(2001) stated that, “First workout and then write down exactly what to measure. The particular mental or behavioral characteristics to be
clearly stated. After that show the proposal to experts who are concerned with the work, assess and respond to their comments”.

In the present study, Goleman’s concept of emotional intelligence was taken into account. It is clear that ‘Emotional Intelligence’ is a broad concept consisting of many different competencies. Emotional competencies are clustered into groups, each based on common underlying emotional ability. These underlying emotional abilities are vital if people are to successfully acquire the competencies necessary to succeed at the work place.

Goleman sets out a framework of emotional intelligence (EI) that reflects how an individual’s potential for mastering the skills of self-awareness, self-management, social awareness and relationship management translates into on the job success. This model is a refinement of the model he used in 1998. In this twenty competencies nest in four clusters of general EI abilities. The framework of emotional competencies is as follows:

**FIGURE -1**

**FRAMEWORK OF EMOTIONAL COMPETENCIES**

<table>
<thead>
<tr>
<th>Recognition</th>
<th>Self-Awareness</th>
<th>Social Awareness</th>
</tr>
</thead>
</table>
| Self-Awareness | - Emotional self-awareness  
- Accurate self assessment  
- Self confidence | - Empathy  
- Service orientation  
- Organizational awareness |

<table>
<thead>
<tr>
<th>Regulation</th>
<th>Self-Management</th>
<th>Relationship Management</th>
</tr>
</thead>
</table>
| Self-Management | - Self- control  
- Trustworthiness  
- Consciousness  
- Adaptability  
- Achievement drive  
- Initiative | - Developing others  
- Influence  
- Communication  
- Conflict management  
- Leadership  
- Change Catalyst  
- Building bonds  
- Team work and collaboration |

For this study, researcher had selected four domain and all these 20 competencies for construction of emotional intelligence scale.

Considering the concept and definition of four domains and each competency, a list of behavior through which emotional intelligence must be
manifested in it the subject’s behavior that had been prepared. It was described in chapter IV. For these purpose different books related emotional intelligence, published text and psychological dictionaries were used.

### 3.3.2.2 Number of Items:

According to Lowenthal, K.M. (2001), decide approximately how many items the test constructor want in the final test. Then start with double of that number of items. Take into mind that too few items may not produce reliable measure.

Test with too many items are excessively lengthy can induce fatigue and response pattern bias (Anastasi, A. 1976)

Hence researcher decided that there should be minimum 80 items in the scale, i.e. each sub-scale contains 20 items.

### 3.3.2.3 Sources of items:

According to Lowenthal, K.M. (2001), the sources of items are as follows:

1) Brainstorming session
2) Conversations
3) Open-ended qualitative interviews
4) Group discussion sessions
5) Published or unpublished text

One or more of above can be used for writing items.

For the writing of items researcher was received the ideas from two sources, namely conversation and published text.

Source of conversation includes discussion with learned person, experts in the field of education and psychology and source of published text includes psychological and educational research journals and periodicals, books on emotional intelligence and literature and research papers on emotional intelligence published on internet.

### 3.3.2.4 Writing items:

Item writing is the preparation of scale itself. If poor items are prepared then scale constructor cannot meet the test objectives. According to Asthana, B. and Agarwal, R.N. (1991), in item writing the following suggestions are taken into consideration:
1) The number of items in the preliminary draft should be more than that in the final draft.

2) The items should be clearly phrased so that their content and not their form determine the response.

3) The test should be comprehensive enough.

4) No item should be such that it could be replied by referring to any other item or a group of items.

5) Each item should carry equal marks.

6) The wording of items should be such that the whole content determines the answer and not a part of it.

So in item writing every precaution has to be taken to ensure that items are valid, appropriate and unambiguous. Make sure that some of items are 'reverse meaning'.

In item writing, researcher considered the suggestions given above and initially 160 items (i.e. 40 items for each domain) were developed by his own experience and above two sources. The items were developed by considering the definition and analysis of emotional intelligence made in previous step. The items were prepared in the form of real life situations from immediate environment regarding teachers characters, way of thinking and doing tasks, understanding job skill, liking and disliking.

After careful personal discussion with the teacher educators, the persons knowledgeable in the field of education and psychology and research guide, taking suggestions from them, overlapping items, the items which were not completely related to specific competence and weak and poor items were either modified and improved or deleted. Then 116 items were selected. i.e. 29 items of each domain. This pool of items needs to be checked and it is done through the process of item evaluation.

3.3.2.5 Item Evaluation:

Item evaluation is the process of judging the adequacy of test items to fulfill the designated purpose of the test.
Written a large pool of items need to be checked to ensure that they meet the following criteria-

1) Face Validity
2) Content validity
3) Lack of ambiguity
4) Not double-barreled
5) Reverse meaning
6) Socially desirability
7) Not to cause offence

One form of item evaluation is subject judgment. According to Womer F.B. (1968), The subjective judgments may be made by test specialist or by subject matter specialist or by both. The test specialists look for ambiguities of wording or for special clues that lead to the answer for item characteristics unrelated to the skill or ability or other attributes that the item is supposed to measure that may influence the way an examinee answers a question. Subject matter evaluators also look for potential ambiguities and also judge whether an item seems to be measuring a knowledge or skill that is related to the purpose of the test.

After this, first draft of the test is prepared.

In Item evaluation, researcher did following steps.

3.3.2.5.1 Search of judges (Experts):

The evaluation of prepared items was necessary. For this purpose the researcher prepared the criteria and fixed the name of judges after discussion with research guide and knowledgeable person in the field of education and psychology. The prepared criteria for judges were as follows:

1. Teacher educators teaching educational psychology
2. Lecturers in psychology of senior college
3. Clinical psychologist

Researcher collected the name and addresses of 32 judges. (Appendix-B)
Categorywise classification of judges are shown in Table -2

**TABLE-2**

**CATEGORIWISE CLASSIFICATION OF JUDGES**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Category</th>
<th>No. of Judges</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Teacher Educator teaching educational psychology</td>
<td>16</td>
</tr>
<tr>
<td>2</td>
<td>Lecturer in Psychology</td>
<td>11</td>
</tr>
<tr>
<td>3</td>
<td>Clinical Psychologist</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>32</strong></td>
</tr>
</tbody>
</table>

The next step in the procedure was to contact these judges and request them for their co-operation by giving them clear instructions.

### 3.3.2.5.2 Instruction to judges:

The researcher sent the forwarding letter to each and every judge along with the list of 116 statements and one evaluation scale for validation of items. (Appendix- A). With this, researcher sent self-addressed envelope with postage for returning the list of items and evaluation scale.

The evaluation scale was prepared considering the following points:

1) Statements measure the concerned competency of emotional intelligence
2) Quality of the statements
3) Number of statements are enough
4) Grammatically correctness of the statements
5) Discrimination power of the statements
6) Fulfillment of the objective
7) Five point response format
8) Content validity of the statements
9) General view about the statements

After the period of two months the researcher sent remainders to the judges and he also personally visited the judges who were with in his reach. After about a period of one month few lists of statements were received from the judges.
Following Table-3 shows the program of the collection of scales from the judges.

### TABLE –3

**PROGRAM OF THE COLLECTION OF SCALES FROM JUDGES**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Date</th>
<th>Description</th>
<th>No. of scales received</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>20/3/2007</td>
<td>Scales sent to 32 judges</td>
<td>10 scales were received one and half month</td>
</tr>
<tr>
<td>2</td>
<td>6/5/2007</td>
<td>Remainder sent 22 judges</td>
<td>6 scales were received with in one month</td>
</tr>
<tr>
<td>3</td>
<td>10/6/2007</td>
<td>Researcher visited personally to judges</td>
<td>5 scales were received</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>21</strong></td>
</tr>
</tbody>
</table>

Evaluation scales received from the judges were classified in the Table- 4

### TABLE-4

**CATEGORYWISE CLASSIFICATION OF JUDGES WHO RETURNED THE SCALE**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Category</th>
<th>No. of Returned scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Teacher educator teaching educational psychology</td>
<td>13</td>
</tr>
<tr>
<td>2</td>
<td>Lecturer in psychology</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>Clinical psychologist</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>21</strong></td>
</tr>
</tbody>
</table>

After receiving the list of statements and evaluation scale from judges,(Appendix- C) on recommendation of judges some items were improved or dropped, the language of some statements were changed and some new items were introduced.

So, in the preliminary draft of scale 104 items were selected. i.e. 26 item for each domain of emotional intelligence.
3.3.2.6 Response Format:

There are several response formats. Some of them are Yes/No, Agree/Disagree, forced choice, Likert types etc. According to Kothari C.R. (2002) “Likert type of scale is considered more reliable because under it respondents are answer each statement included in the instrument. Also each statements included in Likert type scale is given an empirical test for discriminating ability. And Likert type scale can easily be used in respondent centered and stimulus centered studies”.

In the Likert scale the respondent is asked to respond to each of the statement in terms of several degrees i.e. 3 or 5 or 7 degrees of agreement or disagreement. Each point on the scale carries a score.

Lissitz and Greeen (1975), stated that “the reliability of Likert type scales increases with the increase in the number of response choices up to five but then level off”.

According to the objective of the scale and nature of items the researcher selected the Likert type response format for the scale. The subject’s indicate their responses on the five points ranging from total agree, agree, neither agree nor disagree, disagree and total disagree respectively.

3.3.2.7 Demographic and other Data:

The researcher was clear about what other information was needed and format for the information. This information include name of testee, name of school, age, gender, educational qualification, caste category, teaching subject and experience and put these demographic questions before the items in the scale.

3.3.2.8 Pre-try out of Preliminary Draft:

This is also known as pilot study. Guilford, J.P.(1954), suggested that “pre testing helps us to discover weaknesses in the instructions and in the format and to establish a reasonable time limit and a desirable length of test”.

For Pre-try out of the preliminary draft of scale, researcher administered the preliminary draft on 15 secondary school teachers. For the objective of finding out its main shortcoming and remove them somehow. And also determined the insufficiency of the scale and exercise items.
The time to be taken for the administration of the scale was determined. The time limit for completion of scale was established and it was between 30 to 40 minutes.

After completion of testing program, researcher discussed with the all testees about an insufficiency of scale and also that the scale measure whatever the researcher had in mind i.e. emotional intelligence of secondary school teachers. All testees were agreed that the scale constructed by the researcher was measured emotional intelligence of secondary school teachers and the scale was good.

This scale administration does not allow any individual item-analysis.

3.3.3 Preparing the final draft:

In this stage following steps were taken-

3.3.3.1 Try-out of the preliminary draft:

Preliminary try-out of items is important step in construction of the scale. According to Gilford, J.P. (1954) item analysis was done on the basis of first try-out. In this process the items are tried out on a small group of subjects for whom the scale is designed.

Lindquist E.F. (1963) brought out the importance of try-out in following manner

1. To identify weak or defective items, this needs improvement.
2. The data from tryout test helps in choosing the best discriminating items.
3. To find out the exact number of items those should be included in the test.
4. To determine the exact sufficient time for finishing the test.

Steps taken for the try-out of preliminary draft are shown in Table-5

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Prepared the draft of emotional intelligence scale with instruction, response format and demographic information and it was typed and Xeroxed</td>
</tr>
<tr>
<td>2</td>
<td>Selection of sample for try-out and taking permission of Head/Principal of schools</td>
</tr>
<tr>
<td>3</td>
<td>Administration of the scale</td>
</tr>
<tr>
<td>4</td>
<td>Scoring was done</td>
</tr>
</tbody>
</table>
Schedule of preliminary try-out is given in Table -6

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Period</th>
<th>Repertoire</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>August 2007</td>
<td>Prepared the draft of emotional intelligence scale</td>
</tr>
<tr>
<td>2</td>
<td>September 2007</td>
<td>Typing and Xeroxing the preliminary draft</td>
</tr>
<tr>
<td>3</td>
<td>October 2007</td>
<td>Selection of schools and taking permission of Head/Principle</td>
</tr>
<tr>
<td>4</td>
<td>November 2007 to</td>
<td>Administration of emotional intelligence scale</td>
</tr>
<tr>
<td></td>
<td>February 2008</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>March 2008</td>
<td>Scoring of the E.I.S</td>
</tr>
</tbody>
</table>

The preliminary draft of emotional intelligence scale was prepared (Appendix-G)

The distribution of items in the preliminary draft is shown in Table-7

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Sub Scale</th>
<th>Positive items Nos.</th>
<th>Negative items Nos.</th>
<th>Total No. of items</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Self-Awareness</td>
<td>1,2,3,4,7,8,10,11,12,13,14,15,17,20,22,24 = 16</td>
<td>5,6,9,16,18,19,21, 23,25,26 = 10</td>
<td>26</td>
</tr>
<tr>
<td>2</td>
<td>Self-Management</td>
<td>3,6,10,12,13,14,15,16,20,21,22,23,24,26 = 14</td>
<td>1,2,4,5,7,8,9,11,17,18,19,25 = 12</td>
<td>26</td>
</tr>
<tr>
<td>3</td>
<td>Social Awareness</td>
<td>1,4,5,6,8,9,10,11,12,13,14,15,16,17,18,20,21,22,23,24,25 = 21</td>
<td>2,3,7,19,26 = 5</td>
<td>26</td>
</tr>
<tr>
<td>4</td>
<td>Relationship Management</td>
<td>1,2,6,7,8,9,11,12,13,15,18,20,21,22,23,24,26 = 17</td>
<td>3,4,5,10,14,16,17,19,25 = 9</td>
<td>26</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td>68 36</td>
</tr>
<tr>
<td>Grand Total</td>
<td></td>
<td></td>
<td></td>
<td>104</td>
</tr>
</tbody>
</table>
The scoring key and permission letter for Head/Principal were also prepared (Appendix-D).

For preliminary try-out the 25 schools in 6 tahsils of Satara District were purposefully selected. (Appendix-E).

The permission of Head/Principal of these schools was taken. The prepared preliminary draft was Xeroxed in sufficient numbers and administered on secondary school teachers who taught the IX and X Std. and present for testing program in those schools. Total 215 secondary school teachers were responded the E.I.S.

3.3.3.2 Administration:

The E.I.S. was administered on 215 secondary school teachers in groups. In administration of scale, the researcher followed the following procedure.

The researcher was properly motivated the subjects to take scale. The efforts were made by the researcher to establish rapport with subjects. It was done by providing the information to clarify the objective of scale and by assuring the teachers about confidentiality of data and results of testing.

After the subjects were seated comfortably, the Xeroxed copies of the scale were distributed to them. The subjects were asked to fill up the demographic data such as name, qualification, sex, age etc. printed on the front page of the scale. To ensure carefully regarding of the instructions appearing on the front page, the researcher read them loudly and subjects read them silently. After that their difficulties were asked and solved. The language used by the researcher was as simple as possible so that each one understands what was required of him.

The subjects were then asked to begin answering the items. The researcher told the subjects that no time limit was imposed. Ordinarily not more than 30 to 40 minutes were required for all subjects to complete the scale.

After administration of scale, the next step is scoring of the scale.
3.3.3.3 Scoring:

Scoring style was presented in the Table-8

<p>| TABLE-8 |
| SCORING PATTERN FOR POSITIVE AND NEGATIVE ITEMS |</p>
<table>
<thead>
<tr>
<th>Response</th>
<th>Total Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Total Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favorable (Positive)</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Unfavorable (Negative)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

The preliminary draft of the scale contained 68 positive and 36 negative items. According to the testees response the scoring was done according to above pattern.

The next step is item evaluation by statistical judgment. It is another form of item evaluation. In statistical evaluation the difficulty level and discrimination power of items are calculated. And this is done through item analysis.

3.3.3.4 Item Analysis:

The typical item analysis of a test of ability yields two kinds of information. It provides an index of item difficulty and an index of validity. The first major objective of an item analysis is to obtain objective information concerning the items which wrote for the test.

According to Guilford, J.P.(1954), the information is valuable for several reasons as-

1) It provides the opportunity to check up the test writer’s subjective judgment in selecting the items to compose the test.

2) By experience of such checking the test writer learns to improve in his art.

3) He learns how examinees react to items in general and to the items of each test in particular.
4) In multiple-choice tests, he learns which distracters (wrong answers) or misleads are not functioning as shown by their relative unpopularity.

5) He gains new insights into the kind of items that does the best in this kind of test and thinks of new hypothesis concerning the nature of the ability being measured.

6) He learns where and how items need to be rewritten.

Item difficulty should be determined for administrative as well as statistical reasons. It may, for example, be good policy to put a few easy items at the beginning of a test as a means of relieving a test takers anxiety. There are also technical reasons for concern over item difficulty. Item difficulty level influences the shape of total score distribution and at least theoretically, validity and reliability.

According to Anastasi, A. (1982), item discrimination refers to the degree to which an item differentiates correctly among examinees in the behavior that the test is designed to measure. There are numerous indices and procedures for determining item validity (i.e. discrimination power). Anastasi, A. (1982), pointed out that “over fifty different indices of item discrimination have been developed and used in test construction”. According to Gilford, J.P.(1954) the more common ones fall roughly into four groups-

1) One approach uses a measure of precision, in line with the theory that the probability of passing an item is an ogive function of ability.

2) Second approach stresses the numbers of discrimination of the desired sort that the item is capable of making.

   It emphasizes the extent to which the item predicts segregation of examinees into those with high versus those with low critical score.

3) The third approach, which co-relates the item with the criterion score in some way, is probably the most popular one.

4) The fourth approach is by way of analysis of variance.

   By selecting suitable procedure for determining index of validity and calculate the index of validity of each item. Anastasi, A.(1982), stated that, “despite differences in procedure and assumptions, most item discrimination indices provide closely similar results.”
For the present study the researcher selected item-total correlation method for Item Analysis.

According to Chadha, N.K. (1996) after computing the discriminating power with the help of respective correlation, the next step was to test the significance of these estimated coefficient. If the coefficients are significant only then these items will be retained.

So the data was then tabulated and item-total correlations of each item were calculated. The significance at 0.01 level was fixed as the criterion for retaining an item in the scale. Items having correlation coefficient less than the value of 0.252(p<0.01) were dropped. This led to eliminate of 6 items. Later on 6 more items seeming weak in nature were also dropped in view to keep equal number of item in 4 sub scale. i.e. 23 items each in all the four domain of emotional intelligence scale.

Only the validity index was determined because Koul, L. (1984) suggests that, “It is worth nothing that the items for non cognitive test are selected only on the basis of validity index. In such type of test there is no question of difficult value of an item as the subject is required to respond to a series of statements or questions in ‘Yes’ and ‘No’, ‘Agree’ or ‘Disagree’ or in the similar way to indicate his feelings or opinions”.

The item nos. was rejected from the preliminary draft of E.I. scale is shown in the Table-9

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Sub-scale</th>
<th>Item numbers rejected on the basis</th>
<th>Total No. of items rejected</th>
<th>Total No. of item remaining</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Self-awareness</td>
<td>4,15,26</td>
<td>3</td>
<td>23</td>
</tr>
<tr>
<td>2</td>
<td>Self-Management</td>
<td>6,12,16</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>Social Awareness</td>
<td>-</td>
<td>9,17,25</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>Relationship Management</td>
<td>-</td>
<td>10,12,15</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>6</strong></td>
<td><strong>12</strong></td>
<td><strong>92</strong></td>
</tr>
</tbody>
</table>

3.3.3.5 Final draft:

After doing item analysis, items with good discriminating value were taken into the final draft and other items were eliminated.
After item analysis, the total 92 items were remaining in the emotional intelligence scale.

In the final draft of the emotional intelligence scale, the instructions and direction for responding the items were put in the beginning along with demographic data related to the respondent. After that, competency wise statements were arranged. In front of each item the five responses were given. This type of final draft was typed and Xeroxed [Appendix -H].

The distribution of items in final draft of emotional intelligence scale is shown in Table-10.

**TABLE-10**

**DISTRIBUTION OF ITEMS IN FINAL DRAFT**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Positive Items</th>
<th>Negative items</th>
<th>Total No. of items</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Self-Awareness</td>
<td>1,2,3,6,7,9,10,11,12, 13,15, 18,20,22 = 14</td>
<td>4,5,8,14,16, 17,19, 21,23 = 9</td>
</tr>
<tr>
<td>2.</td>
<td>Self-Management</td>
<td>26,32,34,35,36,40,41,42,43,44,46 =11</td>
<td>24,25,27,28,29, 30,31,33,37, 38,39,45 = 12</td>
</tr>
<tr>
<td>4.</td>
<td>Relationship Management</td>
<td>70,71,75,76,77,78,7 9,80,84,86,87,88,89, 90,92 = 15</td>
<td>72,73,74,81,82, 83,85,91 = 8</td>
</tr>
<tr>
<td>Total</td>
<td>58</td>
<td>34</td>
<td>92</td>
</tr>
</tbody>
</table>
Competency wise distribution of items are shown in Table -11.

**TABLE-11**

COMPETENCY WISE DISTRIBUTION OF ITEMS

<table>
<thead>
<tr>
<th>Sr.No.</th>
<th>Domain competencies</th>
<th>Positive</th>
<th>Negative</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>I] Self-Awareness</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Emotional self-awareness</td>
<td>3</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>Accurate self-assessment</td>
<td>7</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>3</td>
<td>Self-confidence</td>
<td>4</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td>14</td>
<td>9</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td><strong>II] Self- Management</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Self-Control</td>
<td>1</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>Trustworthiness</td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>Conscientiousness</td>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>Adaptability</td>
<td>-</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>8</td>
<td>Achievement drive</td>
<td>3</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>9</td>
<td>Initiative</td>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td>11</td>
<td>12</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td><strong>III] Social Awareness</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Empathy</td>
<td>12</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>11</td>
<td>Service Orientation</td>
<td>5</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>12</td>
<td>Organizational awareness</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td>18</td>
<td>5</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td><strong>IV] Relationship Management</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Developing others</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>14</td>
<td>Influence</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>15</td>
<td>Communication</td>
<td>3</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>16</td>
<td>Conflict Management</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>17</td>
<td>Leadership</td>
<td>-</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>18</td>
<td>Change Catalyst</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>19</td>
<td>Building bonds</td>
<td>3</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>20</td>
<td>Team work and collaboration</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td>15</td>
<td>8</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td><strong>Grand Total</strong></td>
<td>58</td>
<td>34</td>
<td>92</td>
</tr>
</tbody>
</table>

The scale was divided into four sub-scales namely, Self-Awareness, Self-Management, Social Awareness, Relationship Management.

**3.3.4 Sample:**

Considering the objectives of the study, multistage random sampling method was employed and sample was selected as follows:

i) In Satara district, there are 11 tahsils; out of these 60% i.e. 7 tahsils were selected by simple random sampling method (Lottery Method).
ii) After selection of 7 tahsils 20% schools of each tahsil were selected by simple random sampling method (Lottery Method).

iii) The secondary school teachers in these schools (i.e 20% of each tahsil) who taught IX and X class and which were present to the testing program and responded the emotional intelligence scale were selected for the study.

So, the sample consisted of 962 secondary schools teachers in 72 schools of Satara district. (Appendix- F).

Sample selection was explained with the following figure

**FIGURE- 2**

**SAMPLE SELECTION OF THE STUDY.**

( MULTISTAGE RANDOM SAMPLE)
FIGURE - 3
DISTRIBUTION OF MALE AND FEMALE SECONDARY SCHOOL TEACHERS IN SAMPLE

FIGURE - 4
DISTRIBUTION OF OPEN CASTE CATEGORY AND RESERVED CASTE CATEGORY SECONDARY SCHOOL TEACHERS IN SAMPLE
FIGURE - 5
DISTRIBUTION OF GRADUATE AND POST GRADUATE SECONDARY SCHOOL TEACHERS IN SAMPLE

FIGURE - 6
DISTRIBUTION OF SCIENCE FACULTY AND ARTS FACULTY SECONDARY SCHOOL TEACHERS IN SAMPLE
FIGURE - 7
DISTRIBUTION OF FOUR AGE GROUPS OF SECONDARY SCHOOL TEACHERS IN SAMPLE

FIGURE - 8
DISTRIBUTION OF FOUR GROUPS OF THE SECONDARY SCHOOL TEACHERS BASED ON TEACHING EXPERIENCE IN SAMPLE
3.3.5 Testing:

According Lowenthal, K.M.(2001), after preparation of final draft decide whether group or individual testing of sample. And then use one of recruiting methods i.e. direct approach, mail, telephone, use of institution etc. Testing groups usually yields results more quickly than testing individual. After testing by using scoring key scoring should be done.

For this study researcher decided group testing of sample and used direct approach method.

The final draft of scale was Xeroxed and administered on the sample which consist of secondary school teachers.

The schedule of testing program is shown in Table -12

<table>
<thead>
<tr>
<th>Sr.No.</th>
<th>Period</th>
<th>Repertoire</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>August 2008 to October 2008</td>
<td>Selection of sample and taking permission from Head/Principal of selected school</td>
</tr>
<tr>
<td>2</td>
<td>November 2008 to January 2009</td>
<td>Xeroxed copies of scales were administered.</td>
</tr>
<tr>
<td>3</td>
<td>February 2009</td>
<td>Scoring was done</td>
</tr>
<tr>
<td>4</td>
<td>March 2009</td>
<td>Analysis of collected data was done</td>
</tr>
</tbody>
</table>

Likewise the scoring key prepared in preliminary try-out step, scoring key for final draft was prepared.

The administration of scale was done. While collecting answers, the researcher kept in mind the ethical and legal points that could not break any law or offend anyone. Researcher gave guarantee of anonymity. And also gave respect for the right to choose to help, respect for privacy and respect for confidentiality. Researcher explained how the help would be used.

After administration, the scoring was done and the total score of each subjects was calculated.

The data were collected and analyzed. On the basis of collected data validity, reliability and norms were calculated.
In the present study, time fixation for completion of E.I. scale was done. The time limit for completion of E.I. scale for secondary school teacher was estimated after due observation and average time taken by first and last teacher each. For completion of scale the estimated average time was 35 minutes.

### 3.3.6 Reliability:

#### 3.3.6.1 Meaning :

A measurement procedure is reliable to the extent to which it provides constant results on repeated measurements. Test reliability tells that to what extent individual differences of score can be assigned to chance errors.

In the words of Womer, F.B. (1968), “Test reliability may be defined as the degree to which errors of measurement influence test scores.”

Guion, R.M.(1965), “Reliability as the extent to which a set of measurements is free from random-error variance.”

In the words of Anastasi, A.(1982) “Reliability refers to the consistency of scores obtained by the same individuals when reexamined with the same test on different occasions or with different sets of equivalent items or under others variable examining conditions.”

In the words of Garret, H.E.(1967) “ The reliability of the test or any measuring instrument depends upon the consistency with which it gauges the ability to whom it is applied.”

According to Guilford, J.P.(1954), “Reliability is the proportion of the true variance in obtained test scores.”

Reliability of a test is generally expressed in terms of reliability coefficient.

#### 3.3.6.2 Types of reliability coefficient:

Generally four methods are used for this purpose. These methods are-

1) Test –Retest Method
2) Parallel Test Method
3) Split –Half method
4) Method of Rational Equivalence

Reliability of the test can be established by one or more of these methods.
Reliability of present scale:

The reliability of present scale was estimated through split-half method and method of relational equivalence.

Split-Half Method:

The most widely used procedure for estimating reliability from single testing is the split-half method. Garrett, H.E.(1967) stated that, “the split-Half method is regarded by many as the best of the methods for measuring test reliability”.

In this method, the test is first divided into two comparable halves and the correlation is found between the two scores obtained for each individual on the two equivalent halves. For splitting the test into two equivalent halves, the odd-even split is quite common in use. The other method to divide into two halves is to consider first fifty percent items as one half and the second fifty percent items as another half.

According to Chadha, N.K.(1996) “if the difficulty level is same , we apply the first half and second half method to divide the test into two halves.”

In the present study splitting a scale into two comparable halves was done by applying first half method and second half method i.e. first 46 items in first half and second 46 items in second half. For this purpose 200 answer sheets of scales out of 962 were randomly selected. First 46 items and second 46 items were scored separately of each selected answer sheets of scales and two scores were obtained. The correlation was found between these two obtained scores for each individual on the two halves.

Method of Rational Equivalence:

This method is also known as ‘Kuder-Richardson reliability or internal consistency reliability’; this refers to how well the questions correlate to each other and to the total test score.

The Kuder-Richardson formula is applicable to tests whose items are scored as right or wrong or according to some other all-or none system. And for the tests of multiple scored items, internal consistency method is used for estimating reliability.

Basically what internal consistency reliability measure is whether the items are all measuring the same thing, whatever that thing might be. There is several different statistical procedures for estimating this reliability. The most common estimates a coefficient alpha, or Cronbach coefficient alpha. If a scale is multi-dimensional,
consisting of numerous subscales, then coefficient alpha must be estimated for each subscale.

According Anastasi, A.(1982), “On the personality inventory for example, the respondent may receive a different numerical score on an items depending on whether he or she checks, usual, sometimes, rarely, or never for such test, a general formula has been derived known as coefficient alpha”.

The acceptability of Cronbach’s coefficient alpha is not determined by its statistical significance. The absolute value of 0.7 (or sometimes 0.8 or 0.6) is normally taken as the criterion of acceptability. According to Lowenthal, K.M. (2003) “Alpha should normally be at least 0.7 for reliability to be regarded as satisfactory.”

In the present study Cronbach’s coefficient alpha was estimated. For this purpose the data used for split-half method was employed.

3.3.7 Validity:

3.3.7.1 Meaning:

Validity of a test means its truthfulness. If a test measures what it intends to measure, then it is said to be valid. The validity of a test is determined by measuring the extent to which it matches with a given criterion.

Gullisen, H.(1967), has defined validity as “The correlation of the test with some criterion.”

Cronbach, L.J.(1970) says that “The validity may be determined by showing that a test covers to be measured or it may be established inductively by naming the traits represented in the items at hand”.

Freeman, F.S.(1971) puts it “The first necessary condition of a valid test is that it has an adequate degree of reliability. If the reliability coefficient of a test is ‘zero’, it can not correlates poorly even with itself can not correlate well with a measure of another variable”.

According to Anastasi, A.(1982), “The question of test validity concerns what the test measures and how well it does so”.

Validity is a relative term. A test is valid for a particular purpose; it is not generally valid.
3.3.7.2 Types of validity:

Some important methods of ascertaining validity of test-

1) Face validity
2) Content Validity
3) Concurrent validity
4) Internal consistency

The validity can be established by one or more of these methods.

Validity of present scale:

The validity of present scale was estimated through Face validity, Content Validity, Concurrent validity and Internal consistency.

1) Face validity:

Face validity refers to whether a measure appears “valid on the face”. A test is said to have face validity when it appears to measure whatever the author had in mind, namely, what he thought he was measuring. Face validity is normally assessed by asking the same thing of judges who are members of the target population(s) who will be completing measure. One or more of those who will be administering the test might also be asked. Judgment of face validity is very useful in helping an author decide whether his test items are relevant to some specific situation or to specialized occupational experience.

According Lowenthal, K.M. (2001), “Face validity should be checked by one or more people from the same population that you are going to ask to complete your measure”.

In the present study face validity was estimated in the pre-tryout of preliminary draft stage of construction of scale.

2) Content Validity:

Anastasi, A.(1982) stated that “Content validation involves essentially the systematic examination of the test content to determine whether it covers a representative sample of the behavior domain to be measured”. Content validity of a measure should be assessed as soon as the items have been developed. This way if items need revision, this can be done before the researcher has large investment in the preparation and administration of the questionnaire.
In the present study content validity was estimated in item evaluation stage of construction of scale.

3) **Concurrent validity:**

It means comparing with existing tests. Lowenthal, K.M. (2003) defines “concurrent validity means looking at the performance of your participants on one or more other methods of assessing what your test is assessing”. The two tests have to be completed by the same people preferably on the same occasion.

According to Anastasi, A.(1982), “If the new test correlates to high with an already available test, without such added advantages as brevity or ease of administration, then the new test represent needless duplication”. Lowenthal, K.M.(2003), stated that “If there is significant association then your test has concurrent validity”.

In the present study for concurrent validity the emotional intelligence scale constructed by the researcher and E.I.S. developed by Dhar, U. et al. (2002) were administered on the same occasion on 162 secondary school teachers. The data was collected and co-relation of two scales was estimated.

4) **Internal consistency:**

The test has been validated by the method of internal consistency also. The essential characteristic of this method is that the criterion is none other than the total score on the test itself. There are different criterions of internal consistency. Correlation procedure can also be employed for the purpose. In this procedure, only those items yielding significant item-test correlations would be retained. A test whose items were selected by this method can be said to show internal consistency.

Another criterion involves the correlation of subtest scores with total score. In the words of Anastasi, A.(1982), “ In the construction of these tests, the scores on each subtest are often correlated with total score, and any subtest whose correlation with total score is too low is eliminated”. The correlations of the remaining subtests with total score are then reported as evidence of the internal consistency of the entire instrument.

In the present study for internal consistency validity was established in the item analysis stage of construction of scale.
The American Psychological Association (1985) states that measures of psychological constructs should demonstrate content validity, criterion-related validity and internal consistency or reliability. So the validity and reliability are extremely important properties of all sound measurement.

### 3.3.8 Standardization:

Standardization in testing has two clearly distinct meanings. In its first sense the term refers to standardization of procedure. Instructions are developed so that they will be as clear as possible to the population to be tested. Definite time limit may be established, sequence of the items is standardized and all other factors which may influence the test performance are kept from varying to an excessive degree. This kind of standardization is vital in any testing programme. Without it, the tests cannot hope to provide reliable scores.

The second meaning refers to a standardized interpretation of scores – the development of so-called norms groups. Norms may be of many types such as age norms, sex norms, grade norms etc.

#### 3.3.8.1 Establishing Norms:

Scores on psychological tests are most commonly interpreted by reference to norms which represent the test performance of the standardization sample. The norms are thus empirically established by determining what a representative group of persons actually do on the test.

Any individual raw score is then referred to the distribution of scores obtained by the standardization sample to discover where he falls in that distribution.

Nearly all standardized tests provide some form of within group norms. With such norms the individual performance is evaluated in terms of the performance of the most nearly comparable standardization group. Within group scores have a uniform and clearly defined quantitative meaning and can be appropriately employed in most types of statistical analysis.

The common within group norms are -

a) Percentiles
b) Standard Scores
c) The deviation IQ
Percentiles-

Percentile scores are expressed in terms of the percentage of persons in the standardization sample who fall below a given raw score. A percentile indicates the individual relative position in the standardized sample.

According to Anastasi, A.(1982) “Percentile scores have been several advantages. They are easy to compute and can be readily understood even by relatively untrained persons. More over percentiles are universally applicable. They can be equally well with adults and children and are suitable for any type of test whether it measures aptitude or personality variables”.

So in present study percentiles norms for four sub-scale and the whole scale (N= 962) were calculated. Descriptive norms were also established on five point scale. i.e. very high, high, average, low and very low for four sub-scale and separately for the scale as whole.

3.4 Preparing Manual of scale:

The manual is the principal source of information about the technical quality of published test and provides detailed directing scoring procedure and research findings. According to Anastasi, A.(1982), manual should be found full and detailed instructions, scoring key, norms and data on reliability and validity were established and the methods employed in computing indices of reliability and validity.

Standards for educational and psychological tests are published jointly by the American Psychological Association, American Educational Research Association and National Council of Measurement in Education (1985). In this, the standards of tests, manuals and reports are as follows:

A] A published test should be accompanied by an updated manual or other available information in which every reasonable efforts has been made to follow the recommendations of these standards.

B] The test, the manual and all associated material should help users make correct interpretations of the test material and warn against common misuse.

C] The manual should state the recommended purpose and applications of the test, the characteristic(s) measured the qualifications required for test administration and interpretation and evidence of reliability and validity and other related research.
D] Directions for administration and scoring should enable duplication of the conditions under which norms, reliability and validity were obtained.

In the present study, manual was prepared for E.I.S. [Appendix- I] considering the guidance given above. The E.I.S. manual was given stress on the following points,

1) Brief information of the Goleman’s emotional intelligence model
2) How the preliminary pool of items was drawn up
3) Description of the sample used for testing
4) Directions for administrations
5) Scoring procedure
6) Descriptive statistics-Norms
7) Reliability
8) Validity

3.5 Concluding Remark:

Thus in this chapter the researcher has given a research procedure followed by him. The next chapter deals with the analysis and interpretation of data collected.