

chapter - 3

RESEARCH METHODOLOGY

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3.1 Introduction

Social research is a systematic activity directed towards discovery and the development of an organized body of knowledge. In order to make a Social Science research an objective and scientific endeavor. It is necessary that scientific method be adopted in which logical and systematized techniques are used, scientific tools are developed or used, and standardized methods of data collection are adopted. Further it is also essential that the data thus collected be analysed scientifically using appropriate statistical techniques.

The scientific method of present study “Relationship between Adolescent's Perception of Parental Temperament, Self-Concept & Emotional Quotient” are explained in following pages especially with reference to objective, hypothesis, operational definition, sample, tools, statistical techniques, scoring and limitations.

3.2 Objectives (Ob)

Present research on “Relationship between Adolescent's Perception of Parental Temperament, Self-Concept & Emotional Quotient” has been conducted with following specific objectives:-

- Ob₁** To study the Sex difference in Self Concept of adolescents and its relationship with Perception of Parental Temperament (Sociability)

- Ob₂** To study the Sex difference in Self Concept of adolescents and its relationship with Perception of Parental Temperament (Accepting)
- Ob₃** To study the Sex difference in Self Concept of adolescents and its relationship with Perception of Parental Temperament (Cooperative)
- Ob₄** To study the Sex difference in Self Concept of adolescents and its relationship with Perception of Parental Temperament (Aggressiveness)
- Ob₅** To study the Sex difference in Self Concept of adolescents and its relationship with Perception of Parental Temperament (Tough minded)
- Ob₆** To study the Sex difference in Emotional Quotient of adolescents and its relationship with Perception of Parental Temperament (Sociability)
- Ob₇** To study the Sex difference in Emotional Quotient of adolescents and its relationship with Perception of Parental Temperament (Accepting)
- Ob₈** To study the Sex difference in Emotional Quotient of adolescents and its relationship with Perception of Parental Temperament (Cooperative)
- Ob₉** To study the Sex difference in Emotional Quotient of adolescents and its relationship with Perception of Parental Temperament (Aggressiveness)

- Ob₁₀** To study the Sex difference in Emotional Quotient of adolescents and its relationship with Perception of Parental Temperament (Tough minded)
- Ob₁₁** To study the Sex difference in Self Concept.
- Ob₁₂** To study the Sex difference in Emotional quotient.
- Ob₁₃** To study the relationship between Self Concept and Emotional quotient of adolescents.

3.3 Hypothesis (H)

Hypothesis is a statement temporarily accepted as true in the light of what is, at the time, known about a phenomenal, and it is implied as bases of action in the search of new truth. It is a proposition which can put to a test to determine its validity. It may prove to be correct or incorrect.

The following null hypothesis had been formulated to carry out present study.

- H₁** There shall be no Sex difference in Self Concept of adolescents and its relation with Perception of Parental Temperament (Sociability)
- H₂** There shall be no Sex difference in Self Concept of adolescents and its relation with Perception of Parental Temperament (Accepting)
- H₃** There shall be no Sex difference in Self Concept of adolescents and its relation with Perception of Parental Temperament (Cooperative)

- H₄** There shall be no Sex difference in Self Concept of adolescents and its relation with Perception of Parental Temperament (Aggressiveness)
- H₅** There shall be no Sex difference in Self Concept of adolescents and its relation with Perception of Parental Temperament (Tough minded)
- H₆** There shall be no Sex difference in Emotional Quotient of adolescents and its relation with Perception of Parental Temperament (Sociability)
- H₇** There shall be no Sex difference in Emotional Quotient of adolescents and its relation with Perception of Parental Temperament (Accepting)
- H₈** There shall be no Sex difference in Emotional Quotient of adolescents and its relation with Perception of Parental Temperament (Cooperative)
- H₉** There shall be no Sex difference in Emotional Quotient of adolescents and its relation with Perception of Parental Temperament (Aggressiveness)
- H₁₀** There shall be no Sex difference in Emotional Quotient of adolescents and its relation with Perception of Parental Temperament (Tough minded)

- H₁₁** There shall be no the Sex difference in Self Concept.
- H₁₂** There shall be no Sex difference in Emotional Quotient.
- H₁₃** There shall be no relation between Self Concept and Emotional Quotient of adolescents.

3.4 Operational Definition

3.4.1 Dimensions of Temperament Scale

The definition of Dimensions of Temperament Scale have been accepted as per the definitions accepted by Dr. N.K. Chadha & Miss Sunanda Chandna, in their scale.

3.4.2 Self-concept

The definition of self-concept has been accepted as per the definitions accepted by Dr. (Miss.) Mukta Rani Rastogi, in her scale.

3.4.3 Emotional Quotient

The definitions of emotional quotient has been accepted as per the definitions accepted by Dr.S.K.Mangal & Mrs. Shubhra Mangal, in their scale.

3.5 Sample & Sampling Technique

3.5.1 Sampling Technique

Purposive sampling technique has been adopted. A small questionnaire was given to all the students containing number of members in the family with age & sex. Thus, based on this questionnaire, only those families were selected. Which had one girl and one boy between 16 to 18 age, with both parents alive. This way the sample selected had 200 families of which 200 girls and 200 boys were selected for the present study. For the purpose of getting adolescents perception of Parental Temperament, only mother's perception of Parental Temperament has been recorded.

3.5.2 Sample Size

200 adolescent boys & 200 adolescent girls between 16- 18 years of age.

3.6 Locale of the Study

The locale of the present study was kept as the school going population of adolescence of Indore district (urban), Madhya Pradesh.

3.7 Tools

3.7.1 Tools Used for Data Collection

As per the objectives of the study, the following tools were used for data collection.

3.7.1.1 Dimensions of Temperament Scale by Dr. N.K. Chadha & Miss Sunanda Chandna

3.7.1.2 Self-Concept Scale by Dr.(Miss.) Mukta Rani Rastogi

3.7.1.3 Emotional Intelligence Inventory by Dr. S.K. Mangal & Mrs. Shubhra Mangal

3.7.2 Dimensions of Temperament Scale

For the present study of dimensions of temperament, Dr. N.K. Chadha & Miss Sunanda Chandna's Dimensions of Temperament scale (DTS) has been used:

3.7.2.1 Selection of Dimensions

To make a scientific selection of the dimensions of temperament, twenty three socially relevant and meaningful dimensions of temperament were taken. These dimensions were given to ten experts in the field of Psychology, for approval. The total number of dimensions over which the experts were unanimous (100% approval) was fifteen and these were further given to a group of another 10 experts to examine the content and formal of these dimensions. These experts were almost unanimous regarding these fifteen dimensions and thus they were retained for the final form of the scale. These dimensions were –

- (1) Sociability
- (2) Ascendance,
- (3) Secretiveness,
- (4) Reflective,
- (5) Impulsivity,
- (6) Placid,
- (7) Accepting,
- (8) Responsible,
- (9) Vigorous,
- (10) Cooperative,
- (11) Persistence,
- (12) Warmth,
- (13) Aggressiveness,
- (14) Tolerance, and
- (15) Tough minded.

3.7.2.2 Item Selection

It was decided to write 20 to 25 items under each of the 15 dimensions. In this way, initial pools of 350 items were ready for the entire scale. These items were given to five experts for rating. The items with 100 percent approval were retained and rest was dropped. Thus after the initial try out, the 263 items were left. These items were further passed on to five experts with a request to rate each item on a 9-point scale in order to measure the social desirability tendency. The rating scale given was –

Table No – 3.7.1

Rating	Meaning of Ratings
1	Extremely Undesirable
2	Strongly Undesirable
3	Moderately Undesirable
4	Mildly Undesirable
5	Neutral
6	Mildly Desirable
7	Moderately Desirable
8	Strongly Desirable
9	Extremely Desirable

The mean value of each item compound on the basis of experts' ratings on 9-point scale constituted the social desirability scale values for each items. Mean value was found to be 5.0. The items having value less

than or equal to 5.0 were rejected. Thus 33 items were dropped and 230 items were retained for further item analysis.

3.7.2.3 Item Analysis

The scale was administered to an unselected sample of 240 students (males and females) for the purpose of item-analysis. The age range of the subjects was 15 to 18 years. Subjects were asked to respond to items as 'Yes' or 'No'. Items measuring of particular trait or dimension positively and responded as 'True' or 'Yes' was given a score of one. The negatively worded items were given a score of 'zero' for a 'true' response and a score of one for false response. The higher the score, the higher was the subject on that dimension. In analysing scale items, item-total test score of each dimension were computed. On the basis of total score of each dimension 27th percentile and 73rd percentile were computed which constituted the lower and upper groups respectively. Thus both the upper and lower groups comprised of 65 cases.

On the basis of the high and low groups on the one hand and two responses of 'Yes' and 'No' or 'True' and 'False' on the other, 'Phi-coefficient' was computed for each item. Consequently Phi (ϕ) value were converted into chi-square (χ^2) values. The items having insignificant chi-squares values were dropped from the scale. Two levels of significance, that is, 5% and 1% were taken as the criterion. Thus, in the final scale 152 items were retained.

3.7.2.4 Independence of Dimensions

For testing the significant relationship among the different dimensions chosen, the scale was applied to another sample of 100 subjects of age range of 15 to 18 years. The data obtained were scored

and subjected to Pearson product Moment Correlation. The correlations obtained among the different dimensions of the scale were fairly low. Major number of inter-correlations came out to be insignificant statistically. This provides sufficient statistical evidence regarding the independence of dimensions in the present temperament scale.

3.7.2.5 Scoring Key

Scoring key of the present scale is given as follows: Give one score for the following responses, otherwise give zero score.

Table No – 3.7.2

Scoring key of Dimensions of Temperament Scale

Sl. No.	Dimensions	Yes Response	No Response	Total Item
1.	Sociability (A)	1, 7, 25, 31, 50, 76, 90, 103, 112, 124	12, 40	12
2.	Ascendant (B)	16, 26, 41, 52, 64, 77, 91, 104	125	9
3.	Secretiveness (C)	2, 8, 32, 42, 65, 78, 92, 113	17, 27	10
4.	Reflective (D)	3, 18, 33, 53, 66, 79, 93, 105, 114, 126	-	10
5.	Impulsivity (E)	43, 54, 80, 127,	67, 94, 106	7
6.	Placid (F)	4, 55, 81, 107, 115, 134, 138, 151	34, 95, 128	11
7.	Accepting (G)	56, 68, 82, 96	35, 44	6
8.	Responsible (H)	5, 19, 45, 57, 69, 83, 97, 116	36	9
9.	Vigorous (I)	9, 20, 58, 117, 129, 135, 140, 142, 144, 145, 147, 149, 152	70	14
10.	Cooperative (J)	28, 46, 59, 71, 84, 98, 130, 139, 146	13, 21, 37, 118, 136	14
11.	Persistence (K)	10, 29, 60, 85, 119,	22, 99, 131	8
12.	Warmth (L)	6, 14, 23, 47, 61, 86	72	14
13.	Aggressiveness (M)	15, 30, 38, 48, 62, 73, 87, 101, 109, 121	-	10
14.	Tolerance (N)	24, 74, 110, 122, 143, 150	11, 39, 49, 88, 133	11
15.	Tough-minded (O)	51, 63, 123	75, 89, 102, 111	7
TOTAL		119	+ 33 =	152

3.7.2.6 Reliability

Test-Retest and Split-Half reliabilities of the present scale were found out. The scale was administered twice with a time interval of 25 days to an unselected sample of 100 subjects. The test-retest reliability coefficient for each dimension of the scale was found out as follows –

Table No– 3.7.3

Sl. No.	Dimensions		Retest Reliability
1.	Sociability	A	.86
2.	Ascendant	B	.84
3.	Secretiveness	C	.94
4.	Reflective	D	.90
5.	Impulsivity	E	.84
6.	Placid	F	.82
7.	Accepting	G	.85
8.	Responsible	H	.88
9.	Vigorous	I	.92
10.	Cooperative	J	.84
11.	Persistence	K	.86
12.	Warmth	L	.83
13.	Aggressiveness	M	.95
14.	Tolerance	N	.88
15.	Tough-minded	O	.94

Test-Retest Reliability for the whole scale was found out to be .94

The Split-half reliability was found out by dividing the whole scale into two halves namely ‘even-odd’ and ‘first-second’ halves for the whole scale. The split-half reliability found out in the case of even-odd items was .76 and for the first-second halves was .79. Both these reliabilities are significant which indicate that the scale is highly consistent and reliable.

3.7.2.7 Validity

Validity of the present scale was found out with the help of two techniques – (1) cross-validation and (2) empirical validity. For cross-validation, the scale was administered to two comparable groups of 100 subjects each in the age range of 15 to 18 years. The data obtained on the first sample and second sample were correlated to test the validity of the scale. The method of Pearson Product Moment was applied. The results were as follows:

Table No – 3.7.4

Sl. No.	Dimensions		Retest Reliability
1.	Sociability	A	.79
2.	Ascendant	B	.84
3.	Secretiveness	C	.80
4.	Reflective	D	.92
5.	Impulsivity	E	.91
6.	Placid	F	.71
7.	Accepting	G	.78
8.	Responsible	H	.72
9.	Vigorous	I	.75
10.	Cooperative	J	.80
11.	Persistence	K	.81
12.	Warmth	L	.79
13.	Aggressiveness	M	.74
14.	Tolerance	N	.68
15.	Tough-minded	O	.82

Overall cross-validation found out to be .81

The results indicate that these values are positive and highly significant. This confirms the validity of the present scale.

The 'Empirical validity' of the scale was found out by correlating the scale with some 'external criterion' that is, 'Thorndike dimensions of temperament'. Both the scales were administered to another sample of 50 subjects and correlation was found out between different dimensions. The dimensions which were common in both the scales indicated positive and significant correlations. Also the total score of the present scale is high and significantly correlated with Thorndike total score ($r = .73 < .01$). Henceforth, the present scale has got a validity coefficient of .73. The inter-correlations between the dimensions of Thorndike dimensions of temperament and present scale are as given in table 4.

3.7.2.8 Norms

The percentile norms showing average performance of a representative groups expressed in terms of 'Percentile Rank' were developed for the construction of percentile norms. The scale was administered to a sample of 250 subjects. The percentile norms of each dimension and total temperament scale are as given in tables on page 10 & 11.

3.7.2.9 Main Feature of DTS

Total Item	152
Sample	240 Students (Male & Female)
Respond Structure	Yes/No
Age Range of Subject	15 to 18 Years
Reliability Method	Test-Retest & Split Half
Validity Technique	Cross Validation / Empirical
Validity	
Measuring Dimensions	15
Norms	Percentile

TABLE - 3.7.6

A	B		C		D		E		F		G		H		I		J		K		L		M		N		O	
	R	P	R	P	R	P	R	P	R	P	R	P	R	P	R	P	R	P	R	P	R	P	R	P	R	P	R	P
7	1	6	12	6	1	6	1	4	1	4	3	1	5	2	8	1	7	1	5	12	9	1	5	1	4	0	3	1
8	3	7	50	7	12	7	13	5	10	7	4	11	6	16	9	5	9	5	6	50	10	5	6	2	5	1	4	5
9	16	8	88	8	50	8	50	6	50	8	5	50	7	50	10	21	10	21	7	88	11	21	7	16	6	2	5	20
10	50	9	99	9	88	9	87	7	90	9	6	89	8	84	11	50	11	50	8	99	12	50	8	50	7	6	6	50
11	84			10	99	10	99			10			9	98	12	79	12	79			13	79	9	84	8	22	7	80
12	97									11	100				13	95	13	95			14	95	10	98	9	50		
															14	99	14	99							10	78		
																									11	94		

Percentile Norms : R = Raw Scores, P = Percentile Rank

TABLE – 3.7.5
INTER-CORRELATION MATRIX

Dimension of the Present Scale	Thorndike Dimensions of the Temperament										
	Sociability	Ascendant	Cheerful	Placid	Accepting	Tough minded	Reflective	Impulsive	Active	Responsible	Total
Sociability (A)	.59**	.21	.00	.27	-.27	.10	.39**	.25	.24	.23	.30*
Ascendance (B)	.25	.56**	.06	.20	.15	.15	.42**	.22	.20	.26	.61*
Secretiveness (C)	.04	.21	.01	.02	.26	.30*	.07	.53**	-.03	-.08	.34*
Reflective (D)	.36**	.43**	-.04	.23	.03	-.19	.67**	.19	.27	.39**	.58*
Impulsivity (E)	.04	.06	-.17	.03	.38**	.19	.03	.50**	.05	.09	.47*
Placid (F)	.08	.12	.05	.29*	.02	.19	.04	.01	.34*	-.21	.23
Accepting (G)	.00	.26	.14	.10	.43**	.12	.35*	.26	.01	.12	.45*
Responsible (H)	.39**	.06	-.28*	.24	-.19	.06	.42**	-.14	.18	.29*	.25
Vigorous (I)	.21	.19	-.09	.22	.05	.06	.36**	-.13	.87**	.23	.43*
Cooperative (J)	-.26	.00	-.06	-.05	.00	.00	-.04	.30	-.12	.03	.03
Persistence (K)	.40**	.11	-.16	.40**	.02	.19	.56**	-.37	.35*	.17	.39*
Warmth (L)	.41**	.12	-.26	.14	.08	-.04	.48**	-.07	.14	.33*	.31
Aggressiveness (N)	.57**	.39**	-.05	.18	-.16	.00	.31*	.10	-.16	.06	.35
Tolerance (M)	.21	.31*	-.26	.03	.12	.31*	.05	.28	-.20	.20	.27
Tough-minded (O)	.22	.32*	.02	.18	.01	.57**	.10	.12	.05	.05	.36*
TOTAL	.52**	.48**	.18	.36**	.06	.28*	.59**	.27	.30*	.33*	.73*

* Significant at .05 level; ** Significant at .01 level

A qualitative description of the scores obtained on different dimensions of the scale is as follows:

Table No – 3.7.7

Sr. No.	Dimensions	Very High	High	Average	Low	Very Low
1.	Sociability (A)	12	11	10	9	Up to 8
2.	Ascendant (B)	9	8	7	6	Up to 5
3.	Secretiveness (C)	10	9	8	7	Up to 6
4.	Reflective (D)	10	9	8	7	Up to 6
5.	Impulsivity (E)	7	6	5	4	Up to 3
6.	Placid (F)	10-11	9	8	7	Up to 6
7.	Accepting (G)	6	5	4	3	Up to 2
8.	Responsible (H)	9	8	7	6	Up to 5
9.	Vigorous (I)	13-14	12	11	10	Up to 9
10.	Cooperative (J)	13-14	12	11	10	Up to 9
11.	Persistence (K)	8	7	6	5	Up to 4
12.	Warmth (L)	14	13	12	11	Up to 10
13.	Aggressiveness (M)	10	9	8	7	Up to 6
14.	Tolerance (N)	11	10	9	8	Up to 7
15.	Tough-minded (O)	7	6	5	4	Up to 3
	TOTAL	132-152	125-131	121-124	117-120	Up to 116

3.7.3 Self-Concept

For the present study of self-concept, Dr. (Miss.) Mukta Rani Rastogi's Self-Concept scale (SCS) has been used.

3.7.3.1 Components of Self –Concept

According to Hurlock (1974) the concept of self has three major components the perceptual, the conceptual and the attitudinal. The perceptual component is similar to physical self – concept which includes the image of one's appearance, attractiveness and sex- appropriateness of body and the importance of different parts of body.

The conceptual components is similar to 'psychological self – concept' which relates to the origin of the individual, his abilities and disabilities, his social adjustment and traits of personality.

The attitudinal component refers to attitudes of a person about his present status and future prospects, his feelings about his worthiness, his attitudes of self – esteem, pride and shame. It includes his beliefs, convictions, values also.

3.7.3.2 Item Analysis

3.7.3.2.1 Content Validity

The 103 items were given to 50 experts (14 psychologists, 6 social workers, 5 clinical psychologists and University teachers, teaching Education and psychology) to rate them in terms of their degree of favorableness and un-favorableness on a nine-point rating scale following Thurston's method of Equal Appearing Intervals (Edwards, 1969).

On the basis of the rating by experts, Q and scale values were determined for item and thus sixty items with low Q- values and having

different scale values are selected so that the scale values of the items (in psychological continuum) are equally spaced.

3.7.3.2.2 Item discriminability

The set of 60 items selected on the basis of experts' rating method was further administered to a sample of 400 respondents belonging to different age, SES, occupations and sex. But for determining the discriminability of each item responses of only 342 cases could be analyzed. The respondents were asked to indicate their agreement or disagreement with each statement on a five – point rating scale. From this sample two groups (25% obtaining highest scores and 25% obtaining lowest scores) were extracted and 't' was worked out for each statement separately on the basis of responses of high scorers and low scorers (Edwards, 1969)'t) is, thus, an index of discriminability of the items.

3.7.3.3 Homogeneity

Besides obtaining item discrimination value, homogeneity of items was also determined statistically. For this purpose each item was correlated with the total construct score (Construct to which it belongs).

These two criteria (discriminability and homogeneity) were applied together to select the items further and those items with low 't' values and in significant correlation coefficients were eliminated. Thus only 51 items out of 60 could be retained. Here against it was kept in mind that both positively and negatively framed items were selected.

Further each total construct score was correlated with the total test score and all ten constructs were found to be significantly correlated (<.01level) with total test score.

Table No – 3.7.8

Constructs of Self – Concept Along with Their Item Numbers

SI. No.	Constructs	Item Numbers
1	Health and Sex Appropriateness	6, 20, 29, 22, 34 & 46 P P N N P P
2	Abilities	4, 8, 12, 23,36,38,39 & 42 P P N N P N N P
3	Self – confidence	7,9,14,16 & 44 P P N N P
4	Self – acceptance	2, 10, 17 & 35 P N N N
5	Worthiness	1 , 3, 19, 25, 27, 41 & 48 P N N P P N P
6	Present, Past & Future	18, 32, 26, 31 & 40 P P N N P
7	Beliefs and Convictions	24, 47 & 49 N P P
8	Feeling of Shame & Guilt	5, 13, 28, 30 & 50 N N N N N
9	Sociability	33, 37, 43 & 45 N P P N
10	Emotional	11, 15, 21 & 51 N N N N

** The letters ‘P’ or ‘N’ below each item show the positiveness or negativeness of the items*

3.7.3.4 Reliability

Reliability of the scale by split- half method “following Spearman- Brown Prophecy formula was found to be 87.

3.7.3.5 Method of Administration

The self – concept scale is self – administering. It can be administrated individually as well as to a Group. There is no time limit but all the items can be responded within the time limit but all the items can be responded within the time limit of 30 minutes. The respondent is given following instruction to give his response:

“Here are given fifty one statements. Below each statement are given five responses, (Strongly agree, Agree, undecided, Disagree and strongly Disagree). Please read each statement carefully and respond to it by making a tick on any of the five responses given. If you really strongly agree with the statement mark (✓) on ‘strongly agree’ if you only agree with the statement mark (✓) on ‘Agree’ and so on.

Example – I feel shy before others.

✓

Strongly agree Agree undecided Disagree Strongly disagree

Here the individual ‘x’ agrees with the statement and therefore has marked (✓) response ‘Agree’. There is no right or wrong response. Try to give your response according to what you feel about yourself in reference to that statement. Your answers will be kept confidential”.

3.7.3.6 Scoring Method

The respondent is provided with five response alternatives to give his response and therefore a score from one to five may be obtained for each item, positive items are scored five to one for responses (strongly

agree, Agree, undecided, disagree and strongly disagree) and negative items are scored one to five for the some response alternatives. In Table No.1 latter P or N below item – number indicates whether the item is positive or negative.

Table No – 3.7.9

Mean scores for the Construct and the whole scale.

Sl. No	Constant	Male	Female	General
1.	Health and Sex appropriateness	21	19	20
2.	Abilities	29	27	28
3.	Self- confidence	18	16	17
4.	Self – acceptance	15	15	15
5.	Worthiness	28	22	25
6.	Present, Past and Future	17	19	18
7.	Beliefs and Convictions	11	11	11
8.	Feeling of shame and guilt	13	19	16
9.	Sociability	14	14	14
10.	Emotional maturity	13	11	12
	Total	179	173	176

3.7.4 Emotional Quotient

For the present study of emotional quotient, Dr. S.K. Mangal & Mrs. Shubhra Mangal’s Emotional Intelligence Inventory (EII) has been used.

3.7.3.1 Introduction

Emotional Intelligence Inventory has been designed for use with Hindi & English Knowing 16 + years age of school, College & University students for the measurement of their emotional intelligence (total as well as separately) in respect of four areas or aspects of emotional intelligence namely, Intra-personal Awareness (knowing about

one's own emotions) Inter- personal Awareness (knowing about others emotions), Intra- personal Management (Managing one's own emotions) and Inter - personal Management (Managing others emotions) respectively.

Table No – 3.7.10

Areas or Aspects of MEII

Sl. No.	Area / Aspect	No. of Items
(a)	Intra - Personal Awareness (Own Emotions)	25
(b)	Intra - Personal Awareness (Others Emotions)	25
(c)	Intra - Personal Management (Own Emotions)	25
(d)	Intra - Personal Management (Others Emotions)	25
	Total of Item	100

It has 100 items, 25 each from the four areas to be answered as yes or no. While constructing items for each of these areas due care taken to make use of the simple language and provide well -defined purposeful statements to the respondents for the assessment of their emotional intelligence.

In the beginning a list of 180 items was prepared. The list was presented to a group of 5 judges and only those items were retained about which the judges were unanimous. It led to the elimination of 30 items out of 180. The remaining 150 items were subjected to item analysis.

3.7.3.2 Item Analysis

Item analysis was carried out by computing by serial correlation of each item (1) with the total scores on the inventory and (2) with the area total scores. The significance of a by serial at 0.01 level was fixed as the criterion for retaining an item. This led to the elimination of 48 items. Later on two more items seeming somewhat alike and weak in nature were also dropped in view of keeping equal number of items i.e. 25 each in all the four areas or dimension of emotional intelligence inventory.

3.7.3.3 Standardization

The final test of 100 items was administered on a large sample of 2200 (1050 males and 1150 females) students 16 – years age.

This sample was drawn by stratified proportionate cluster random sampling technique from the population of the student studying in (1) XII class of the higher secondary schools of Haryana state affiliated to Board of School education Haryana or C.B.S.E (2) colleges including engineering and B.Ed. Colleges affiliated to M.D. University Rohtak and (3) students studying in the post-graduation departments of M.D. University Rohtak. The distributions of the scores of the subjects of both sexes in respects to the total inventory as also of the four separate areas of the inventory were tested for the normality by applying chi square test. The test upheld that the distributions were not departing significantly from normality.

Normality of these distributions may also be adjudged as self-revealed, if we have a look at the statistics obtained through the administration of the inventory on the standardization sample provided in the table 2.

Table No – 3.7.11

Various Statistics of the Distribution of Inventory Scores

Statistics	Males (N = 1050)					Females (N = 1150)				
	Intra PA	Inter PA	Intra PM	Inter PM	Total	Intra PA	Inter PA	Intra PM	Inter PM	Total
Mean	16.89	16.52	17.72	16.64	68.07	16.61	16.71	17.89	18.05	69.25
Median	17.00	17.00	18.00	17.00	69.00	17.00	17.00	18.00	18.00	70.00
Mode	19	20	18	18	70	16	18	20	20	68
Skewness	.319	.374	.514	.203	.246	.287	.319	.684	.434	.390
Kurtosis	.306	.443	.081	.465	.348	.216	.306	.377	1.89	.035
Range Limits	5-24	5-25	5-25	8-30	32-98	4-25	5-24	5-25	5-25	31-94
Standard Deviation	3.61	3.96	3.58	3.46	11.03	3.75	3.75	3.87	3.48	11.15

3.7.3.4 Reliability

Reliability of the inventory was examined through three different methods namely

- (i) Split half method using Spearman - Brown Prophecy formula.
- (ii) K - R formula (20)
- (iii) Test - retest method (after a period of 4 weeks)

The reliability coefficients derived through these tests are given in the table 3.

Table No – 3.7.12

Reliability Coefficients

Methods used	N	Reliability Coefficient
Split half	600	.89
K-R formula (20)	600	.90
Test – retest	200	.92

Note: For the first two methods sample consisted of 300 males and 300 females randomly selected. For test - retest the retest was administered on 100 males and 100 females.

3.7.3.5 Validity

The validity for the inventory has been established by adopting two different approaches, namely factorial and criterion related approach.

3.7.3.6 Factorial Approach

For adopting factorial approach inter - correlations among the four areas of the inventory were calculated. The derived correlation matrix is presented in the table4.

Table No – 3.7.13

Reliability Coefficients

	Intra PA	Inter PA	Intra PM	Inter PM
Intra PA	-	.716	.501	.437
Inter PA	.716	-	.452	.480
Intra PM	.501	.452	-	.476
Inter PM	.437	.480	.476	-

Table 4 reveals that correlations among the four areas of the inventory vary from .437 to .716 (after testing these correlations at the .01 level - 2 tailed, it was found that all were significant). Thurston's centroid method of factor analysis was employed and after the extraction of second centroid factor from the first residual matrix, it was amply proved that the four areas of the emotional intelligence inventory are quite interrelated and inter - dependent among themselves.

3.7.3.7 Criterion related Approach

Two different external measures used for this purpose were (1) Adjustment Inventory for Collage Students Developed by A. K. P. Sinha and R. P. Singh and (2) Emotional Maturity Scale developed by Yasvir Singh and Mahesh Bhargava.

In both these measures the lower scores tend to represent favorable result i.e. good adjustment higher level of emotional maturity while in the case of our Emotional Intelligence Inventory it goes in the opposite direction i.e. providing lower level of emotional intelligence.

The validity coefficients (the product movement correlation coefficients obtained between total scores on Emotional Intelligence Inventory and Adjustment Inventory as well as Emotional Maturity Scale) obtained through these two measures has given in table below.

Table No– 3.7.14

Validity coefficient of the inventory

Measured used	Validity coefficients
Adjustment Inventory for college students (N =400)	-0.662
Emotional Maturity Scale (N = 400)	-0.613

3.7.3.8 Norms

Percentile norms were computed for both males and females students with regard to all the four areas of the inventory separately as well as for the inventory as whole.

TableNo– 3.7.15**Percentile Norms for Males (N=1050)**

Percentile	Intra- Personal Awareness	Inter- Personal Awareness	Intra- Personal Management	Inter- Personal Management	Total Inventory
P99	24.00	24.00	24.00	23.00	89.49
P95	22.00	22.00	23.00	22.00	85.00
P90	22.00	21.00	22.00	21.00	82.00
P85	21.00	21.00	21.00	21.00	80.00
P80	20.00	20.00	21.00	20.00	78.00
P75	20.00	20.00	20.00	19.00	78.00
P70	19.00	19.00	20.00	19.00	74.00
P65	19.00	19.00	19.00	18.00	73.00
P60	18.00	18.00	19.00	18.00	72.00
P55	18.00	18.00	19.00	18.00	70.00
P50	17.00	17.00	18.00	17.00	69.00
P45	17.00	16.00	18.00	17.00	67.00
P40	16.00	16.00	17.00	16.00	66.00
P35	16.00	15.00	17.00	16.00	64.00
P30	15.00	14.00	16.00	15.00	63.00
P25	14.00	14.00	15.00	15.00	61.00
P20	14.00	13.00	15.00	14.00	58.00
P15	13.00	12.00	14.00	13.00	56.00
P10	12.00	11.00	13.00	12.00	53.00
P5	11.00	9.00	11.00	11.00	49.00
P1	8.00	7.00	8.00	9.00	42.51

Table No – 3.7.16

Percentile Norms for Female (N=1150)

Percentile	Intra- Personal Awareness	Inter- Personal Awareness	Intra-Personal Management	Inter-Personal Management	Total Inventory
P99	24.00	24.00	24.00	24.00	91.00
P95	22.00	23.00	23.00	22.00	86.00
P90	21.00	21.00	22.00	22.00	83.00
P85	20.00	21.00	21.00	21.00	81.00
P80	20.00	20.00	21.00	21.00	79.00
P75	19.00	20.00	20.00	20.00	78.00
P70	19.00	19.00	20.00	20.00	76.00
P65	18.00	19.00	20.00	20.00	75.00
P60	18.00	18.00	19.00	19.00	73.00
P55	17.00	18.00	19.00	19.00	71.00
P50	17.00	17.00	18.00	18.00	70.00
P45	16.00	17.00	18.00	18.00	68.00
P40	16.00	16.00	17.00	18.00	67.00
P35	15.00	15.00	17.00	17.00	65.00
P30	15.00	15.00	16.00	17.00	64.00
P25	14.00	14.00	16.00	16.00	62.00
P20	13.20	13.00	15.00	16.00	60.00
P15	13.00	13.00	14.00	15.00	58.00
P10	12.00	12.00	13.00	14.00	55.00
P5	10.00	10.00	11.00	12.00	50.00
P1	7.51	7.00	8.00	9.00	39.00

3.7.3.9 Classification of Emotional Intelligence Scores into Categories

For a rough estimation and quick interpretation of the emotional intelligence scores earned by an individual student attempts were also made for providing a fivefold categorization. It was done by dividing the base line of the normal curve into five equal units being equal to 1.2σ . Below table present the classification of emotional intelligence with regards to the total scores. The mean and standard deviation of the population upon which these norms are based are already given in the table below.

Table No – 3.7.17

Classification of Emotional Intelligence in terms of categories.

Categories	Description	Range of Scores	
		Female	Male
A	Very Good	88 & above	90 & above
B	Good	75-87	77 -89
C	Average	61-74	63 - 76
D	Poor	48-60	49- 62
E	Very Poor	47 & below	48 & below

3.7.3.10 Scoring Procedure

Scoring can be done by hand or with the help of stencil

The mode of response to each of the item of the inventory is in the form of a forced choice i.e. either yes or no, indicating complete agreement or disagreement with the proposed statement respectively. In the present Emotional Intelligence Inventory thus there are items where the response 'yes' is indicative of the presence of emotional intelligence and 'no' for the lack of emotional intelligence. Similarly, there are items where 'no' response provides clue for the presence of emotional intelligence and 'yes' for its absence.

For scoring one mark is to be provided for the response indicating presence of emotional intelligence and zero for the absence of emotional intelligence.

Table No – 3.7.18

Classification of Emotional Intelligence of Categories in four areas.

Area	Category	Description	Range of scores	
			Male	Female
Intra Personal Awareness	A	Very Good	23 & above	24 & above
	B	Good	20-22	20-23
	C	Average	15-19	14-19
	D	Poor	10-14	10-13
	E	Very Poor	9 & below	9& below
Inter Personal Awareness	A	Very Good	25 & above	24 & above
	B	Good	20-24	20-23
	C	Average	14-19	14-19
	D	Poor	9-13	10-13
	E	Very Poor	8 & below	9& below
Intra Personal Management	A	Very Good	25 & above	25 & above
	B	Good	21-24	21-24
	C	Average	15-20	16-20
	D	Poor	11-14	12-15
	E	Very Poor	10& below	11& below
Inter Personal Management	A	Very Good	24 & above	25 & above
	B	Good	20-23	21-24
	C	Average	15-19	16-20
	D	Poor	11-14	12-15
	E	Very Poor	10 & below	11& below

The list of the response to the items indicative of the presence or absence of emotional intelligence is provided in below table.

Table No – 3.7.19

Scoring Scheme of Emotional Intelligence Inventory

	Mode of Response	Score
Sl. No. of Items (Where 'Yes' response shows presence of intelligence)		
6,18,19,20,23 to 25, 27 to 29, 31, 41 to 44, 51 to 56, 58 to 68, 70, 71, 73 to 76	'Yes'	1
79 to 82, 84, 88 to 90, 96,99	'No'	0
Sl. No. of Items (Where 'No' response shows presence of intelligence)		
1 to 5, 7 to 17, 21, 22, 26, 30, 32 to 40, 45 to 50, 57, 69,72, 77, 78, 83, 85 to 87, 91 to 95, 97, 98,100	'No'	1
	'Yes'	0

3.7.3.11 Interpretation of a Subject's Score

For interpreting an individual score, help may be taken from the given percentile scores in Tables 6 and 7 separately for male and female students. The subjects scores denoting his level of emotional intelligence may also be interpreted (area wise as well as total) in terms of one of the five categories provide in tables 8 and 9. Since the present emotional intelligence is scored on the positive side i.e. presence of emotional intelligence, a higher scores of the individual (in the respective areas as well as total) here shows a higher level of emotional intelligence and lower score a lower level of emotional intelligence. The higher percentile rank of a subject may provide a quite satisfactory position of his or her level of emotional intelligence in a group of the population tested.

3.7.3.12 Instruction for Inventory Users

- 3.7.3.12.1. It is self-administrating inventory. The cooperation of the students on whom it is to be administered is quite essential. Therefore, the user should try to win over their confidence.
- 3.7.3.12.2. The user as well as the examinee should read the instructions, given in the front back page of the test booklet carefully.
- 3.7.3.12.3. The user as well as the examinee should get themselves acquainted with the uses and purposes of this inventory.
- 3.7.3.12.4. There is a provision of separate response sheets for writing responses to the items of the inventory. Therefore, examinees should be instructed not to write anything on the test booklet.
- 3.7.3.12.5. The total adjustment scores as well as the area wise scores are to be computed though the response given on the response sheets with the help the scoring scheme provided in table below.
- 3.7.3.12.6. This scoring may be done by hand or scoring stencil. Interpretations are to be made carefully with the help of percentile norms as well as by using the classification tables of categories.

Table No – 3.7.20

Main Features of EII

1.	Age Group	16+
2.	Areas Measured	Four Areas (a) Intra - Personal Awareness (Own Emotions) (b) Intra - Personal Awareness (Others Emotions) (c) Intra - Personal Management (Own Emotions) (d) Intra - Personal Management (Others Emotions)
3.	Items	100 (25 item for each area)
4.	Standardization	2200 (1050 Males and 1150 Females) of 16+ age
5.	Reliability Method	(a) Split Half Method (b) K-R formula Method (c) Test – Retest Method
6.	Validity	(a) Factorial Approach (b) Criterion Related Approach
7.	Norms	Percentile Norm
8.	Scoring Procedure	1 mark for presence of Emotional Intelligence 0 mark for absence of Emotional Intelligence
9.	Time Limit	30-40 minutes

3.8 Procedure of Data Collection

For the data collection investigator personally contacted respondents in the school through the help of the schools. Investigator obtained the permission from principal of the school. The selected candidates were given the Dimensions Temperament Scale (DTS), Self-Concept Scale (SCS) and Emotional Intelligence Inventory (EII), one by one. DTS required about 40 minutes and SCS as well as EII required about 30 minutes to complete. Thus Dimensions of Temperament Scale was given to students before lunch break, and Self Concept Scale and Emotional Intelligence Inventory was given to students after lunch was over.

After the collection of data, the scoring of Emotional Quotient scale, Self-Concept scale and Parental Temperament scale was done.

Parental Temperament scale has 15 temperament types. During scoring it was found that parents showed high & low temperaments in only 5 temperaments. Thus, only 5 temperaments have been analyzed and interpreted.

3.9 Statistical Techniques

The data collected were tabulated, and analyzed to arrive at results and conclusions. As proper use of statistical techniques helps in analyzing and interpreting data in a better way. For the statistical analysis Chi-Square and Correlation Product Movement Test was used for fulfilling the objectives of the present study.

3.10 Delimitations of the Study

3.10.1 The study was delimited to only school going adolescents.

3.10.2 The study was restricted to only Indore (urban).

3.10.3 The measurements were based only on the tests mentioned above.

3.10.4 For Parental Temperament only mothers' temperament has been included.