

# CHAPTER – III

## METHODOLOGY & DESIGN

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"A scientific investigation is based on a research problem. It attempts to find the relationship between independent & dependent variables. Methodology is the plan structure and strategy of investigation to answer research problem validity, objectively accurately & economically. This is done through setting up frame work for adequate test of relations among variables. (Kerlinger 1991)

### **The Study and Its Nature**

The present study belongs to "Expost-Facto' correlational research. In such studies inferences about relations among variables are made without direct intervention from concomitant variation of independent & dependent variables (Kerlinger). The multivariate data of study has been taken from the nature's laboratory experimentation (Cronbach, 1957).

The study is basically a compilation of three sub studies related to depression, coping behaviour & social skills & its dimensions. The study has made use of variance analysis & its nine factorial experiments have the potentially to reveal both effectively & interactions of three independent variables.

All the experiments conducted in the course of the study are based on the "Fixed effect model". The independent variables in such experiments are manipulated not through active control, but through selection, because we enter the experiment with a great number of variables usually allowing them to control artificially (D'Amato, 1970).

The present study has made use of the factorial design to give natural operational setting to variables & for study of interactions among independent variables. The factorial character of the study has also checked the entrance of extraneous variance. In the present study each one of the experiments is a 3x2x2 factorial one.

## **Variables**

Present study is related to depression, coping behaviour & social skills. These are three independent variables which have been manipulated through selection on two & three levels.

## **Independent Variables**

1. Grandparental proximity
2. Gender
3. Age

**Table No. 3.1**

<b>The independent variables</b>	<b>Levels of treatment</b>
1. Proximity	Higher, Medium & Low
2. Gender	Boys & Girls
3. Age	Preadolescents & Early adolescents

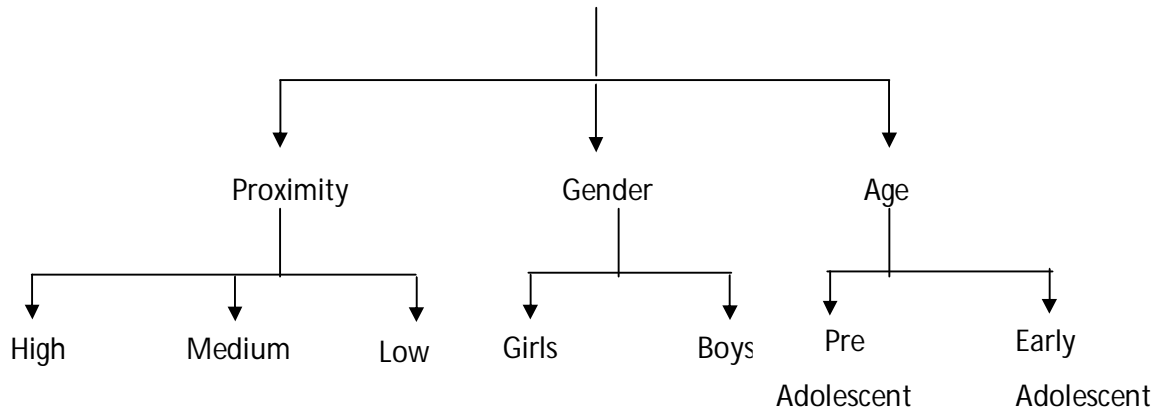
### **Dependent Variable**

The dependent variables of the study are–

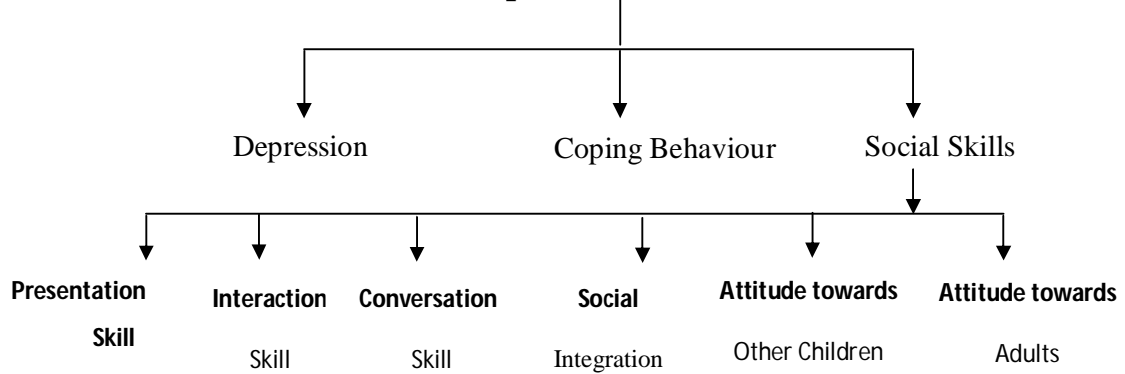
1. Depression
2. Coping behaviour
3. Social skills & its six dimensions
  - i. Presentation Skills
  - ii. Interaction Skill
  - iii. Conversation Skill
  - iv. Social Integration
  - v. Attitude towards other children
  - vi. Attitude towards adults

## Diagrammatic Description of the Variables

### Independent Variables



### Dependent Variables



## **Objectives of the Study**

1. To study the effect of grandparental proximity on depression, coping, behaviour & social skills of school going pre adolescents & early adolescents.
2. To study the effect of grandparental proximity on depression, coping behaviour & social skills of school going boys and girls.
3. To study the effect of different levels of grandparental proximity on depression, coping behaviour & social skill of school going children.
4. To study interactions existing among grandparental proximity, gender & age when these variables remain active in influencing the factors like depression, coping behaviour & social skills.
5. To study the relationship between grandparental proximity & depression, social skills & coping behaviour with a view to utilise this short if knowledge for both guidance & correctional programmes.

## **Hypotheses**

The above stated 3x2x2 research paradigm has seven basic hypotheses. The total hypotheses for each of the dependent variables & their dimensions are 63 (Depression =7, coping behaviour =7, social skill and its dimension = 7x6=42).

The basic hypothesis of the one 3x2x2 factorial experiment are given below-

1. Grandparental proximity will not affect depression/coping behaviour/social skills.
2. Gender will not affect depression/coping behaviour/social skills
3. Age will not affect depression/coping behaviour/social skill.
4. Grandparental proximity x Gender will not exist in the set (Depression, coping, social skills)
5. Grandparental proximity x Age will not exist in the set (Depression, coping behaviour & social skill)
6. Gender x Age will not exist in the set (Depression, coping behaviour & social skill)
7. Grandparental x Gender x Age will not exist in the set (Depression, coping behaviour & social skills)

## **Design**

The study has made used the factorial design to give natural operational setting to variables & for study of interactions among independent variables. In the present study each one of the experiments is a 3x2x2 factorial one.

There are 12 groups, these 12 groups are famed with the variation of the three independent variable. Each group differ for the other & none is repeated. There are 9 experiments & all the experiments have 3x2x2 factorial setting the research paradigm of the study runs for each one of the 9 experiments as under.

**Table No. 3.2**  
**Research Paradigm**

<b>Level of Proximity</b>	<b>High level Proximity</b>		<b>Medium level Proximity</b>		<b>Low level Proximity</b>	
	<b>Boys</b>	<b>Girls</b>	<b>Boys</b>	<b>Girls</b>	<b>Boys</b>	<b>Girls</b>
<b>Early Adolescents</b>	1	2	3	4	5	6
<b>Pre Adolescents</b>	7	8	9	10	11	12

### **Sample**

The incidental purposive sampling technique has been used in the present study. The respondent elements in this context are school going early & pre adolescent's girl & boys in the age range of 10 to 15 years, only literate pre & early adolescents of Meerut & Muzaffarnagar are included in the study. They belong to middle socio economic status & educational background of all religions. 1000 elements have been randomly selected for the sample in first instance. Since it is a trivariate factorial study, only 450 elements could considerably give

the required scores in this context on account of strike due to other reasons institutions remain close for some period which made it difficult to get the element under study to give scores for all three factors out of the sample of 450 the final sample of 240 for the study was drawn as per requirements of the research paradigm.

**Table No. 3.3**  
**Research Paradigm with Number in Each Cell**

Levels	Proximity						$\Sigma$
	High level Proximity		Medium level Proximity		Low level Proximity		
<b>Early adolescent</b>	20	20	20	20	20	20	120
<b>Pre. Adolescent</b>	20	20	20	20	20	20	120
<b><math>\Sigma</math></b>	40	40	40	40	40	40	N=240

Thus, final analysis has been made on a sample of 240 elements, on which complete information in all respects are available.

### **Homogeneity of Variance in the Sample**

The basic assumption underlying analysis of variance is that the variance due to experimental error within each of the treatment population should be homogeneous. Before the data were treated by the analysis of variance, they were tested for homogeneity of variance by



cochran's test. Cochran's is a simple and more sensitive test in application for the purpose especially, for making use of much of the information. (Table No. 3.4) in the sample data (Winer, 1971).

**Table No. 3.4**

**Homogeneity of variance in the studies**

<b>S. No.</b>	<b>Name of the Study</b>	<b>C value of Homogeneity of Variance</b>	<b>P</b>
1.	Depression	0.1918	<.01
2.	Coping behaviour	0.3433	<.01
3.	Social skill	0.2060	<.01

A perusal of the (Table No. 3.4) makes it clear that homogeneity of variance is not found significant; it is likely that they may remain insignificant in respect of all the remaining experiments, statistics used in Cochran's test are:

$$C = \frac{S_j^2 \text{ Largest}}{\sum S_j^2}$$

Where,

$S_j^2$ . Largest= Largest within variance of cell

$\sum S_j^2$  = Sum of within variance of each cell

**Table No. 3.5**  
**Homogeneity of Variance (Depression)**

Terms	Cell No. Derivariation	1	2	3	4	5	6	7	8	9	10	11	12
T <sub>j</sub>	Σx	185	168	203	208	149	167	109	101	86	92	69	69
Σx <sub>j</sub> <sup>2</sup>	Σx <sup>2</sup>	2885	1898	2945	2956	1609	2167	863	783	580	574	315	315
T <sub>j</sub> $\frac{2}{N}$	$(\sum x)^2 \frac{2}{n}$	1711.25	1411.2	2060.45	2163.2	1110.05	1394.45	594.05	510.05	369.80	423.20	238.05	238.05
SS <sub>j</sub>	$\sum x^2 \frac{(\sum x)^2}{n}$	1173.75	486.80	884.53	792.80	950.05	772.55	268.95	272.95	210.02	150.80	76.95	76.95
S <sup>2</sup> j	$\frac{SSj}{n-1}$	61.78	25.62	46.56	41.73	50.02	40.66	14.16	14.37	11.06	7.94	4.05	4.05
ΣSS <sub>j</sub>		6117.3											
ΣS <sup>2</sup> <sub>j</sub>		321.982											

$$C = \frac{61.78}{321.982},$$

$$C = 0.19187 (N-5)$$

**Table No. 3.6**  
**Homogeneity of Variance (coping behaviour)**

Terms	Cell No.	1	2	3	4	5	6	7	8	9	10	11	12
Tj	$\Sigma x$	1494	1595	1601	1565	1510	1566	1635	1561	1460	1599	1508	1709
$\Sigma x_j^2$	$\Sigma x^2$	114928	128263	130417	123795	115338	125470	135046	123271	110370	128787	116038	157567
$T_j \frac{2}{N}$	$(\Sigma x) \frac{2}{n}$	111601.80	127201.25	128160.05	122461.25	114005	1226178	133661.25	121836.05	106580	127840.05	1137303.2	146034.06
SSj	$\Sigma x^2 \frac{(\Sigma x)^2}{n}$	3326.20	-1061.25	2256.95	1333.75	1333	2859.20	1383.75	1434.95	3790	946.95	2334.80	11532.95
$S^2_j$	$\frac{SSj}{n-1}$	175.063	-55.881579	118.78684	70.197	70.157895	150.48421	72.8289	75.623684	199.47368	49.839474	122.8842	606.99737
$\Sigma SSj$		33594.25											
$\Sigma S^2_j$		1768.11783											

$$C = \frac{606.99737}{1768.11783},$$

$$C = 0.3433$$

**Table No. 3.7**  
**Homogeneity of Variance (Social skills)**

Terms	Cell No.	1	2	3	4	5	6	7	8	9	10	11	12
Tj	$\Sigma x$	1750	1730	1853	1687	1956	1905	1752	1718	1752	1699	1977	1891
$\Sigma x_j^2$	$\Sigma x^2$	153574	150412	174135	144003	193810	184459	153904	149372	153904	145043	196741	182837
$T_j \frac{2}{N}$	$(\Sigma x) \frac{2}{n}$	153125	149645	171868.45	142298.45	191296.80	181451.25	153475.20	147596.20	153475.20	144330.05	195426.45	178794.05
SSj	$\Sigma x^2 - \frac{(\Sigma x)^2}{n}$	449	767	2454.55	1784.55	2513.20	3007.75	428.80	1795.80	428.80	712.95	1314.55	4042.95
$S^2_j$	$\frac{SSj}{n-1}$	23.631579	40.368	129.1868	89.713158	132.274	158.3026	22.568	94.5158	22.568421	37.5237	69.1868	212.78684
$\Sigma SSj$		19619.90											
$\Sigma S^2_j$		1032.6257											

$$C = \frac{212.78684}{1032.6257},$$

$$C = 0.20606$$

## **Tools**

### **1. Mental Depression Scale**

#### **A – Profile**

Scale	Mental Depression Scale
Author	L.N. Dubey (Professor)
Nature	Questionnaire
Administration	Individual
Duration	No. limit
Age range	12 to 55 yrs
Reliability	0.64 & 0.69 by Test Retest & Split Half
Validity	0.41 & 0.39 with depression inventory (S.Karim) & Behaviour Rating Scale by teachers & parents.
Source	Saraswati shiksha Mahavidyalaya Jabalpur

#### **B. Introduction**

90 statements were constructed containing the symptoms of mental depression. The symptoms were collected from books of different authors. The statements were given to 10 judges to examine. After making modification as advised by these judges only 72

statements were retained which yielded high discrimination of 0.27 and above.

The scale is standardized on 850 males and 380 females randomly selected from various school, colleges and offices. Students, teachers, professors, officers, businessman, sportsmen & professional person were included in the sample.

### **C. Administration and Scoring**

There are 50 statements in the scale; early statement has two alternative answers. 'Yes' & 'No' read the statement carefully. If you feel that the statement is true in your case you put the right ( $\surd$ ) mark in the square indicating 'Yes' and if you feel that the statement is false put the right mark in the square indicating 'no' against the statement.

There are 50 statements in the scale. Every statement has two answers 'Yes' & 'No'. 'Yes' indicates mental depression and 'no' indicates no depression. Allot one mark for 'yes' & zero mark for 'no'. In the end sum up all the marks. Higher scores show higher mental depression. Interpret the raw scores in terms of category.

## **2. Social Skills Problem Behaviour Checklist**

### **A. Profile**

Scale                      Social Skills Problem Behaviour Checklist

Author	Madhu Mathur & Saroj Aurora
Nature	Assessment
Administration	Individual
Duration	No Limit
Reliability	Alpha Cronback Co. efficient rtt(.79). Test retest (.80) & Guttman Split Half (-78)
Validity	Content Validity

## **B. Introduction**

The checklist was devised to measure social skills in checklist form childhood through early adolescents (8 to 15) yrs may be wed by teacher/parent. The social skills checklist assess negative social behaviour on 6 dimensions viz. Presentation skills (7 items), interaction skills (5 items), conservation (14 items), social integration (14 items), Attitude towards other children (9 items) & attitude towards adult (13 items). Initially 150 items were listed out & given to 10 psychologists for internal consistency & content validity. A pilot study was also carried out & there often only 62 items were retained, which were rated on three point scale, with 3, 2, 1 higher score indicating magnitude of the problem. Thus, there are 62 item in the scale to be responded by either parents or by teacher and if required by both. This scale was administered on 3000 children

between the age group of 8 to 15 years boys and girls from the normal population and then reliability & validity were worked out. Overall the standardization sample of 800 boys and girls consisted of 70% of high caste, 27% from minority/rested class. The sample was a mixed group of student population in high, middle and low economic status.

### **C. Administrated & Scoring**

The checklist is to be responded by either parents or by the class teacher & if required by both ensuring them the use of data only for research purpose & family interaction. Items are tick marked as to whether that social skills problem is observed very often, occasionally or never in child's behaviour.

The social skills problem checklists is based on three points rating scale viz, most often occasionally & never showing the magnitude of social skill problem. A weightage score of 3, 2 & 1 was assigned for the least behaviour problem. Hence the maximum score on checklist is 186 showing social skills problem on all dimensions & score of below 45 shows insignificant social skills problems. It indicates higher the score higher is social skills problem in child. The score obtained on checklist may be interpreted dimension wise or globally as well.



### **3. Coping Resource Inventory**

#### **A. Profile:**

Scale	Coping Resource Inventory
Nature	Objective questionnaire
Administration	Individual
Duration	15 to 20 min.
Age range	10 to 15 years
Reliability	split Half-90.3 & Test-Retest-89.6
Validity	Criterion Validity with coping resource inventory by (M. Susan Marting) and (Allen L. Hammer)

#### **B. Introduction**

The coping resources inventory was devised to measure coping behaviour in children of age pre-adolescents & early adolescent (10 to 15) years. The coping resources inventory assess positive coping behaviour on 6 dimensions viz. cognitive (cog) 6 items social (soc) 6 items, Emotional (emo) 6 items, physical (phy) 5 items, Spiritual/Philosophical (spiri/philo) 5 items initially 72 items were listed out & given to 10 examine. After making modification as advised by these judges only 50 items were retained, which were rated on 5 point scale, with 5,4,3,2,1 higher score indicating magnitude of the problem. Thus, these are 28 items in the inventory to be responded by children.

This inventory was administered on 1000 children between the age group of 10 to 15 years, boys & girls from the normal population & than reliability & validity were worked out. Over all standardization sample of 500 boys and 500 girls randomly selected from various school of Meerut.

### **C. Administred and Scoring**

The coping resource inventory may be administered to individuals. While the inventory has been administered to subjects 10 to 15 yrs of age, younger subjects may find the spiritual/philosophical items difficult to answer. The inventory can normally be completed in about 15 minutes. Individuals should be instructed to answer each item by marking on a given squares, that most accurately describe their behaviour in the past life experiences. Respondents should be encouraged to answer every item. If there are questions about the meaning of an item the individual should be advised to answer as he or she understands it. Some individual may require alternate instructions due to special conditions such as physical illness, depending on whether an assessment of resources is desired for the special condition or for the individual typical condition. For each of the 28 items respondent use a 5 points scale to indicate how often they have engaged in the behaviour described in the items over the past life experiences. Scale scores are simply the sum of the item responses for each scale. In addition to the five individual scale scores, a

total resources score is computed by summing the five scale scores. The higher the scale score, the higher the resource.

### **Data Processing**

For empirical verification of null hypothesis of the nine experiments and to determine main effects as well as 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> order interaction, the technique analysis of variance has been used. For multiple comparison Newman Kuels and t-test has been used.

SPSS- 17 version was used for analysis of the collected data.