CHAPTER 2

METHODOLOGY AND DESIGN

OUTLINE

I The Study
II The Problems
III The Design
IV The Sample
V The Hypotheses
VI The Tools
I. **THE STUDY**

The present investigation happens to be a complex of two studies, one related to Learned helplessness and second to Death anxiety. These studies proceed within bivariate factorial experiments of the '2x2' type. The total number of bivariate factorial experiments is divided among the studies as given below:

1) Learned helplessness 1

2) Death anxiety 1

Total 2

II. **THE PROBLEMS**

The present bivariate study of '2x2' constitution has proceeded with the following specific problems:

1. Do young adult patients, aged 25 to 35 years, of Hansen's disease have a significantly variant pattern of reactions in terms of Learned helplessness and Death anxiety?

2. Do young adult normals, aged 25 to 35 years, have a significantly variant pattern of reactions in terms of Learned helplessness and Death anxiety?
3. Do middle aged patients, aged 45 to 55 years, of Hansen's disease have a significantly variant pattern of reactions in terms of Learned helplessness and Death anxiety?

4. Do middle aged normals, aged 45 to 55 years, have a significantly variant pattern of reactions in terms of Learned helplessness and Death anxiety?

III. THE DESIGN

The 'randomized group design' has been adopted for the study. The elements are selected on random basis. The greater control of the extraneous variables is effected by the design through the layout of factorial experiments that have a '2x2' constitution. The subject related extraneous variance (of personality, aptitude, needs, intelligence etc.), the situational extraneous variance (elements related to mid-and-low socio-economic status), the religion variance, educational level, and the effects of caste and regional distribution have been controlled by randomization. The extraneous variance of sex has been controlled by elimination, by taking only male elements randomly from the age group of (25 to 35 and 45 to 55 years).

The average age of the total sample of young and middle aged is 30 years and 50 years respectively.
The independent variables of the study are Hansen's disease and Age. The description of their manipulation proceeds as follows:

1. **Hansen's disease** has two exclusive levels. The normals who are free of Hansen's disease and the patients of Hansen's disease (H.D).

2. **Age**, too, has two levels.

   First level is of 25 to 35 years (young adult), and second is of 45 to 55 years (middle aged).

   The control group was matched with experimental group on age and education.

   The dependent variables of the study fall into Learned helplessness scores and Death anxiety scores. The choice of these two types of dependent variables rests on the assumption that they atypically relate to patients of the Hansen's disease.

   The paradigm of research for both of the studies remains as follows:
The elements of the universe (U) are comprised of people suffering and not suffering from Hansen's disease (HD). The patients were taken from Kushta Nivaran Kendra, Rohtak and Bahadurgarh, and from 'O.P.D.' (Outdoor Patients Department) and in-patient' words of the Government Medical College and Hospital, Rohtak. The normal elements were freely drawn from general population of the Rohtak district. Availability of female patients being meagre, therefore only male subjects were taken up for the
study. The final sample of 200 elements, for '2x2' paradigm, was selected as per requirements of the cells. Each cell contains 50 elements for each of the factorial experiment.

The distribution may be stated as under:

<table>
<thead>
<tr>
<th></th>
<th>a₁</th>
<th>a₂</th>
</tr>
</thead>
<tbody>
<tr>
<td>a₁</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a₂</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental group</td>
<td>Hansen's Disease patients</td>
<td>Control group</td>
</tr>
<tr>
<td>b₁</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Young adult
(25 to 35 Yrs)   a₁ b₁   a₂ b₁
b₁
n = 50   n = 50

Middle aged
(45 to 55 Yrs)   a₁ b₂   a₂ b₂
b₂
n = 50   n = 50

N = 200
V THE HYPOTHESES

The basic hypotheses may be stated as under:

1) There exists a likelihood that young adult patients (25 to 35 Yrs) of Hansen's disease would have significantly variant pattern of reactions in terms of Learned helplessness and Death anxiety.

2) There exists a likelihood that young adult (25 to 35 years) normal population would have significantly variant pattern of reactions in terms of Learned helplessness and Death anxiety.

3) There exists a likelihood that middle aged patients (45 to 55 years) of Hansen's disease would have significantly variant pattern of reactions in terms of Learned helplessness and Death anxiety.

4) There exists a likelihood that middle aged (45 to 55 years) normal population would have significantly variant pattern of reactions in terms of Learned helplessness and Death anxiety.
The sample can be assumed to be representative on account of the paradigm providing sufficient and equal number of observations for each treatment of the study (Edward, 1971).

VI. **TOOLS USED**

(a) **For Data Collection:**

The psychological tools administered on each subject of the sample are:

1. **Learned-Helplessness Scale:**

   **ANAGRAM:**—As most of the patients of Hansen's disease were illiterate, therefore anagram task could not be used as a measure of Learned helplessness

   (i) **Profile:**

   **Tool:** \( \text{LH - Scale} \)

   **Author:** Dr. Upinder Dhar, Sarvdeep Kohli and Santosh Dhar

   **Nature:** Verbal

   **Structure:** 15 items, 3 point scale

   **Duration:** No time limit (Generally about 10 minutes).

   **Reliability:** Test - Retest = 0.77.

   \[ \text{Split - half} = 0.46 \]
Validity:  
Content Validity = High 0.88.

Available at:  
Haryana Council of Psychological Research, 
Vijay Nagar, Bhiwani - 124021.

(iii) **Description:**

The scale is self-administered. It has no fixed time limit. The subject is asked to interpret the items for himself/herself. The co-operation of the subject being important, it is facilitated by stressing the confidential nature of the scale. It is not desirable to disclose to the subjects. The exact purpose for which the tool is used. If the subject is of inquiring type, vague answers like, "the test measures personality", "it assesses the reaction of individuals in varying situations", etc. are given. Unwarranted expectations or apprehensions are not raised in the mind of the subject. The scale yields the measure of Learned helplessness (LH).

(iii) **Administration:**

1. The instructions printed on the test booklet are sufficient to take care of the questions that are asked.

2. After establishing a favourable rapport, the experimenter reads out the instructions to the subjects.
3. The subjects 'tick mark' their choices on the three point scale.

4. There is no 'right' or 'wrong' answer to the statements or items.

(iv) Scoring:

1). Scoring is done manually.

2). No 'scoring key' or 'stencil' is required.

3). Each answer is checked as 'right', 'uncertain' or 'wrong'..

4). 'Right', 'Uncertain', or 'Wrong', are awarded the scores of 'three', 'two', or 'one' respectively.

5). The sum of scores on all the fifteen items is the LH score.

2. Death – Anxiety Scale:

(1) Profile:

Tool : Death – anxiety scale.

Author : Dr. Upinder Dhar and Savita Mehta.

Nature : Verbal

Structure : 10 items
Duration: No limit (Generally about 5 to 10 minutes).

Odd-even .87

Face Validity High

Content validity High

Validity based on reliability index .93

Available with: Dr. Upinder Dhar
Institute of Management studies
Devi Ahilya Vishwavidyalaya,
Indore.

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1 According to Garrette P. 349 (Reliability index)
(ii) **Description:**

The test is constituted of simple items. Responses are in terms of 'Yes' or 'No'. It is a self administered scale and has no fixed time limit. Focus is laid on individuals' reactions to different situations. The subject is not told about the purpose of the test. The scale yields measure of the Death-anxiety in terms of DA-Scores.

(iii) **Administration**

1) A favourable rapport is established with each individual or testee.

2) The testee is asked to encircle the responses of his/her choice against all the items.

3) There is no 'right' or 'wrong' answer to the items or statements. Each item has its own relevance in the light of the concept of Death-anxiety.

(iv) **Scoring:**

1). Hand scoring is done conveniently.

2). No 'Scoring key' or 'stencil' is required.

3). Each item is checked as 'Yes' or 'No'.
4). 'Yes' or 'No' responses are awarded as '1' and '0' respectively.

5). The sum of scores of all the ten items is the D.A-score.

(b) **TOOLS FOR DATA ANALYSIS**

1. 'F' test

2. 'T'-test
1. Two way analysis of variance

Step I:

\[ C = \frac{(\text{Grandsum})^2}{N} \]

Whereas:

\[ C = \text{Correction term.} \]
\[ N = \text{Number of subjects.} \]

According to the formula:

\[ \text{Grand sum } = \Sigma X_1 + \Sigma X_2 + \Sigma X_3 + \Sigma X_4 \]

Where:

\[ \Sigma X_1, \Sigma X_2, \Sigma X_3, \Sigma X_4 = \text{Total score of group I, II, III and IV respectively.} \]

Step II

Total sum of the squares (Tss)

According to formula:
 Whereas:

\[ \Sigma X^2 = \text{Sum of the squares.} \]

\[ C = \text{Correction term.} \]

Step III

Sum of the squares between the groups. \((SS_B)\)

According to the formula:

\[ \text{OverallSSB} = \frac{(\Sigma X_1)^2}{N_1} + \frac{(\Sigma X_2)^2}{N_2} + \frac{(\Sigma X_3)^2}{N_3} + \frac{(\Sigma X_4)^2}{N_4} - C \]

Where:

\[ \Sigma X = \text{Total scores of the group} \]

\[ N = \text{Number of subjects in group.} \]

Step IV:

Sum of the squares within the groups \((SS_W)\)

According to the formula:
\[ SSw = TSS - SS_B \quad (\text{overall}) \]

Since in the present factorial we have two independent variables, we will have to calculate the \( SS_B \) separately for each independent variable.

(a) Sum of the squares between the groups of the independent variable i.e. Hansen's disease (HD) \( (SSB)_{v1(\text{HD})} \).

According to the formula:

\[ SSB_{v1(\text{HD})} = \frac{(\sum X_1 + \sum X_2)^2}{N_1 + N_3} + \frac{(\sum X_2 + \sum X_4)^2}{N_2 + N_4} - C \]

Where:

\[ \sum X = \text{Total scores of the group.} \]

\[ N = \text{Number of subjects in the group.} \]

\[ C = \text{Correction term.} \]

(b) Sum of the squares between the groups of IInd variable.

i.e. Age levels \( (SSB_{v2} \text{ Age levels}) \)

According to the formula:
SSB (V2 Age levels) = \frac{(\sum x_1 \cdot \sum x_2)^2}{n_1 \cdot n_2} + \frac{(\sum x_3 \cdot \sum x_4)^2}{n_3 \cdot n_4} - C

Where:

\( \sum x \) = Total scores of the group.
N = Number of subjects in the group.
C = Correction term.

(c) We know that overall SS has three parts.

i.e. SSB (V1) + SSB (V2) + Interaction (S\_Interaction).

Interaction (SS) = SSB (overall) - SSB (V1) - SSB (V2)

Where:

SSB = Sum of the squares between the groups.
## ANOVA - SUMMARY (α.05)

<table>
<thead>
<tr>
<th>Source of variance</th>
<th>df ( (K - 1) )</th>
<th>Sum of squares</th>
<th>Mean Squares ( (MSq) )</th>
<th>F-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between HD ( (V_1) )</td>
<td>( K = \text{no. of groups} )</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between Age ( (V_2) )</td>
<td>( (K - 1) ) ( K = \text{no. of groups} )</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interaction ( (df_1 \times df_2) )</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HD x Age ( (V_1 \times V_2) )</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within groups ( (N - K) ) ( N = \text{Total no. of subjects}. )</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*According to the formula:

\[
F = \frac{\text{Between variance}}{\text{Within variance}}
\]
### 2. *t*-test

According to the formula:

\[
    t = \frac{M_1 - M_2}{\sqrt{\frac{\sigma_1^2}{N_1} + \frac{\sigma_2^2}{N_2}}}
\]

Where:

- \( M_1 \) = Mean of group one.
- \( M_2 \) = Mean of group two.
- \( \sigma_1 \) = Standard deviation of group one.
- \( \sigma_2 \) = Standard deviation of group two.
- \( N_1 \) = Number of subjects in group one.
- \( N_2 \) = Number of subjects in group two.

When samples are large (more than 30 in size) the *t*-critical value is expressed as a Z. If the *t*-value equals or exceeds 1.96 and 2.58, it can be concluded that the difference between means is significant at .05 and .01 levels respectively (Garrett, 1981).