Chapter – 4

Results and Discussion
Chapter – 4

Results and Discussion

The results have been presented and discussed under the following headings:

4. A) Frequency distributions of scores on tested variables.
4. B) Reliability coefficients of different measures.
4. C) Bivariate correlations between tested variables.
4. D) Structural relationship among the tested variables.

4.A) FREQUENCY DISTRIBUTIONS OF SCORES ON TESTED VARIABLES

The frequency distributions of scores on different variables are shown in Tables 4.1 to 4.9 along with the graphical representation of frequency distributions in this chapter.

The frequency distribution of scores on depression as derived from Zung’s Self Rating Depression Scale has been shown in Table 4.1. Table 4.2 shows the frequency distributions of scores on different dimensions of personality like extraversion, psychoticism, neuroticism, and social desirability as derived from Eysenck’s Personality Questionnaire. Table 4.3 highlights the frequency distributions of scores on different dimensions of hardiness, namely control, commitment, and challenge as derived from Kobasa’s Scale of Hardiness. Similarly, Table 4.4 demonstrates the frequency distributions of scores on different measures of social support, quantitative and qualitative as derived from Sarason’s Social Support questionnaire. The frequency distribution of scores on Empathy are shown in Table 4.5 as derived from Mehrabian Epstein Emotional Empathy Scale. The frequency distribution of scores on Internal-External Locus of control as derived from Rotter’s Internal-External Scale are highlighted in Table 4.6.
scores on different measures of anxiety (Q₃, C, L, O, Q₄) as derived from Cattell & Scheier's Anxiety Scale, are shown in Table 4.7. The frequency distributions of scores on single measure of burnout as derived from Maslach Burnout Inventory and perceived stress as derived from Sarason’s Perceived Stress Scale are shown in Tables 4.8 and 4.9 respectively.

<table>
<thead>
<tr>
<th>Depression</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cl</td>
</tr>
<tr>
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<td>30-35</td>
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<td>35-40</td>
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<tr>
<td>40-45</td>
</tr>
<tr>
<td>45-50</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>300</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>Mean</td>
</tr>
<tr>
<td>300</td>
<td>33.43</td>
</tr>
</tbody>
</table>
Graph showing scores on depression as derived from Zung’s Self Rating Depression Scale (1965)

Fig. 4.1
Table 4.2

Frequency distributions of scores on different dimensions of personality as derived from Eysenck Personality Questionnaire

<table>
<thead>
<tr>
<th>Factors / Dimensions</th>
<th>Extraversion</th>
<th>Psychoticism</th>
<th>Neuroticism</th>
<th>Social desirability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cl</td>
<td>f</td>
<td>F</td>
<td>f</td>
<td>Cl</td>
</tr>
<tr>
<td>2-4</td>
<td>–</td>
<td>20</td>
<td>1</td>
<td>0-3</td>
</tr>
<tr>
<td>4-6</td>
<td>–</td>
<td>38</td>
<td>1</td>
<td>3-6</td>
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<tr>
<td>6-8</td>
<td>–</td>
<td>43</td>
<td>29</td>
<td>6-9</td>
</tr>
<tr>
<td>8-10</td>
<td>47</td>
<td>89</td>
<td>35</td>
<td>9-12</td>
</tr>
<tr>
<td>10-12</td>
<td>99</td>
<td>74</td>
<td>98</td>
<td>12-15</td>
</tr>
<tr>
<td>12-14</td>
<td>73</td>
<td>15</td>
<td>89</td>
<td>15-18</td>
</tr>
<tr>
<td>14-16</td>
<td>52</td>
<td>12</td>
<td>25</td>
<td>18-21</td>
</tr>
<tr>
<td>16-18</td>
<td>18</td>
<td>9</td>
<td>10</td>
<td>–</td>
</tr>
<tr>
<td>18-20</td>
<td>11</td>
<td>–</td>
<td>12</td>
<td>–</td>
</tr>
</tbody>
</table>

N : 300 300 300 300
Mean : 2.92 9.65 10.43 8.75
SD : 2.61 3.02 2.75 2.98
SK : .20 .01 .22 -.37
Kr: : .02 .09 .49 3.52
Graph showing scores on different dimensions of personality as derived from Eysenck & Eysenck Personality Questionnaire (1975)

Graph showing scores on Social desirability dimension of Personality as derived from Eysenck & Eysenck Personality Questionnaire (1975)

FIG. 4.2
Table 4.3

Frequency distributions of scores on different dimensions of Hardiness as derived from Kobasa’s Hardiness Scale

<table>
<thead>
<tr>
<th>Factors / Dimensions</th>
<th>Control</th>
<th>Challenge</th>
<th>Commitment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cl</td>
<td>f</td>
<td>f</td>
<td>Cl</td>
</tr>
<tr>
<td>0-3</td>
<td>38</td>
<td>49</td>
<td>0-2</td>
</tr>
<tr>
<td>3-6</td>
<td>74</td>
<td>77</td>
<td>2-4</td>
</tr>
<tr>
<td>6-9</td>
<td>123</td>
<td>121</td>
<td>4-6</td>
</tr>
<tr>
<td>9-12</td>
<td>64</td>
<td>43</td>
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</tr>
<tr>
<td>12-15</td>
<td>1</td>
<td>1</td>
<td>8-10</td>
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<td></td>
<td>12-14</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>14-16</td>
</tr>
</tbody>
</table>

N : 300 300 300
Mean : 7.10 6.98 6.64
SD : 2.68 2.62 3.03
Sk : -1.3 -.15 -.13
Kr : -.42 -.5 -.42
Graph showing scores on different dimensions of hardiness as derived from Kobasa Hardiness Scale (1982)

Graph showing scores on commitment dimension of hardiness as derived from Kobasa Hardiness Scale (1982)

FIG. 4.3
Table 4.4

Frequency distributions of scores on Social Support as derived from Sarason's Social Support Questionnaire

<table>
<thead>
<tr>
<th>Factors / Dimensions</th>
<th>Quantitative</th>
<th>Qualitative</th>
</tr>
</thead>
<tbody>
<tr>
<td>CI</td>
<td>f</td>
<td>CI</td>
</tr>
<tr>
<td>1.00-1.50</td>
<td>84</td>
<td>1-2</td>
</tr>
<tr>
<td>1.50-2.00</td>
<td>93</td>
<td>2-3</td>
</tr>
<tr>
<td>2.00-2.50</td>
<td>86</td>
<td>3-4</td>
</tr>
<tr>
<td>2.50-3.00</td>
<td>32</td>
<td>4-5</td>
</tr>
<tr>
<td>3.00-3.50</td>
<td>5</td>
<td>5-6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6-7</td>
</tr>
</tbody>
</table>

N: 300
Mean: 1.89
SD: .55
Sk: .15
Kr: -.50

N: 300
Mean: 5.54
SD: .80
Sk: -2.82
Kr: 10.80
Graph showing scores on social support (quantitative) as derived from Sarason’s Social Support Questionnaire (1983)

Graph showing scores on social support (qualitative) as derived from Sarason’s Social Support Questionnaire (1983)

FIG. 4.4
Table 4.5

Frequency distribution of scores on empathy as derived from Mehrabian Epstein Emotional Empathy Scale

<table>
<thead>
<tr>
<th>Empathy Interval</th>
<th>Frequency (f)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50-60</td>
<td>2</td>
</tr>
<tr>
<td>60-70</td>
<td>30</td>
</tr>
<tr>
<td>70-80</td>
<td>68</td>
</tr>
<tr>
<td>80-90</td>
<td>79</td>
</tr>
<tr>
<td>90-100</td>
<td>82</td>
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<tr>
<td>100-110</td>
<td>30</td>
</tr>
<tr>
<td>110-120</td>
<td>7</td>
</tr>
<tr>
<td>120-130</td>
<td>2</td>
</tr>
</tbody>
</table>

N : 300
Mean : 87.04
S.D. : 12.93
Sk : .24
Kr : -.03
Graph showing scores on empathy as derived from Mehrabian Epstein Emotional Empathy Scale (1972)

FIG. 4.5
### Table 4.6

Frequency distribution of scores on Locus of Control as derived from Rotter's Internal-External Scale

<table>
<thead>
<tr>
<th>Locus of Control</th>
<th>f</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-3</td>
<td>14</td>
</tr>
<tr>
<td>3-6</td>
<td>20</td>
</tr>
<tr>
<td>6-9</td>
<td>95</td>
</tr>
<tr>
<td>9-12</td>
<td>103</td>
</tr>
<tr>
<td>12-15</td>
<td>32</td>
</tr>
<tr>
<td>15-18</td>
<td>36</td>
</tr>
</tbody>
</table>

- N: 300
- Mean: 10.14
- S.D.: 3.50
- Sk: .17
- Kr: .03
Graph showing scores on locus of control as derived from Rotter’s Internal-External Scale (1966)

FIG. 4.6
Table 4.7

Frequency distributions of scores on different dimensions of anxiety as derived from Cattell & Scheier’s Anxiety Scale

<table>
<thead>
<tr>
<th></th>
<th>Factor Q3</th>
<th>Factor C</th>
<th>Factor L</th>
<th>Factor O</th>
<th>Factor Q4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cl</td>
<td>f</td>
<td>Cl</td>
<td>f</td>
<td>Cl</td>
<td>f</td>
</tr>
<tr>
<td>1-2</td>
<td>—</td>
<td>0-1</td>
<td>12</td>
<td>0-2</td>
<td>38</td>
</tr>
<tr>
<td>2-4</td>
<td>63</td>
<td>1-2</td>
<td>4</td>
<td>2-4</td>
<td>113</td>
</tr>
<tr>
<td>4-6</td>
<td>89</td>
<td>2-3</td>
<td>70</td>
<td>4-6</td>
<td>8</td>
</tr>
<tr>
<td>6-8</td>
<td>94</td>
<td>3-4</td>
<td>41</td>
<td>6-8</td>
<td>6</td>
</tr>
<tr>
<td>8-10</td>
<td>39</td>
<td>4-5</td>
<td>48</td>
<td>8-10</td>
<td>0</td>
</tr>
<tr>
<td>10-12</td>
<td>14</td>
<td>5-6</td>
<td>38</td>
<td>10-12</td>
<td>0</td>
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<tr>
<td>12-14</td>
<td>1</td>
<td>6-7</td>
<td>50</td>
<td>12-14</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>7-8</td>
<td>27</td>
<td>14-16</td>
<td>0</td>
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<tr>
<td></td>
<td>-</td>
<td>8-9</td>
<td>10</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

N : 300   N : 300   N : 300   300  300  300
Mean : 6.36  Mean : 5.03  Mean : 5.10  9.27  6.70
SD : 2.29   SD : 2.05   SD : 2.51   3.62  2.40
Sk : .54    Sk : -.10   Sk : .26    .57  -.69
Kr : .05    Kr : .54    Kr : .35    -.03  .48

94
Graph showing scores on factor C of anxiety as derived from Cattell & Scheier's Anxiety Scale (1963)

Graph showing scores on different factors of anxiety as derived from Cattell & Scheier's Anxiety Scale (1963)

FIG. 4.7
Table 4.8

Frequency distribution of scores on burnout as derived from Maslach Burnout Inventory

<table>
<thead>
<tr>
<th>Cl</th>
<th>f</th>
</tr>
</thead>
<tbody>
<tr>
<td>50-60</td>
<td>57</td>
</tr>
<tr>
<td>60-70</td>
<td>111</td>
</tr>
<tr>
<td>70-80</td>
<td>76</td>
</tr>
<tr>
<td>80-90</td>
<td>30</td>
</tr>
<tr>
<td>90-100</td>
<td>21</td>
</tr>
<tr>
<td>100-110</td>
<td>3</td>
</tr>
<tr>
<td>110-120</td>
<td>2</td>
</tr>
</tbody>
</table>

N = 300
Mean = 61.68
S.D. = 11.97
Sk = .96
Kr = .83
Graph showing scores on burnout as derived from Maslach & Jackson’s Burnout Inventory (1981)

FIG. 4.8
**Table 4.9**

Frequency distribution of scores on perceived stress as derived from Sarason's Perceived Stress Scale

<table>
<thead>
<tr>
<th>Perceived Stress</th>
<th>f</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-9</td>
<td>7</td>
</tr>
<tr>
<td>9-12</td>
<td>15</td>
</tr>
<tr>
<td>12-15</td>
<td>44</td>
</tr>
<tr>
<td>15-18</td>
<td>85</td>
</tr>
<tr>
<td>18-21</td>
<td>78</td>
</tr>
<tr>
<td>21-24</td>
<td>35</td>
</tr>
<tr>
<td>24-27</td>
<td>15</td>
</tr>
<tr>
<td>27-30</td>
<td>21</td>
</tr>
</tbody>
</table>

N : 300  
Mean : 18.90  
S.D. : 4.51  
Sk : .16  
Kr : .03
Graph showing scores on perceived stress as derived from Sarason's Perceived Stress Scale (1989)

FIG. 4.9
These tables also mention means, standard-deviations, median, skewness, and kurtosis for the respective frequency distributions of scores. An examination of the values of skewness and kurtosis reveals that the scores on different measures included in this study are more or less normally distributed. The scores on different measures follows a smooth curve (Fig. 4.1 to 4.9).

4.B) RELIABILITY COEFFICIENTS OF DIFFERENT MEASURES

The author submits that if different measures are to be of any utility for continuing research, they should be reliable. In this context it is significant to emphasize that different tests used in the present study have been extensively used by researchers, and the psychometric properties of all the tests are fairly well established.

The reliability coefficients, however, have been computed to examine the reliability of the measures on the sample selected for the current study. A random sample of 100 subjects out of 300 subjects used in the current study, the reliability coefficients of different measures were computed. The time gap between the two administration of different measures was approximately 15 days. An examination of Table 4.10 reveals that the test-retest reliability coefficients of four different measures as derived from Eysenck Personality Questionnaire range from 0.60 to 0.86. The reliability coefficients for N-scale, E-scale, P-scale, and L-scale have been found to be 0.80, 0.86, 0.60 and 0.75 respectively. Keeping in view the acceptable criterion, it can be inferred that the obtained reliability coefficients are fairly satisfactory. These reliability coefficients are also comparable to the reliability coefficients as reported by the authors of the test.
Table 4.10
Reliability Coefficients of different measures as derived from Eysenck Personality Questionnaire and IPAT Anxiety Scale

<table>
<thead>
<tr>
<th>Different Measures</th>
<th>$r_{tt}$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Eysenck Personality Questionnaire</strong></td>
<td></td>
</tr>
<tr>
<td>1. N-Scale</td>
<td>0.80</td>
</tr>
<tr>
<td>2. E-Scale</td>
<td>0.86</td>
</tr>
<tr>
<td>3. P-Scale</td>
<td>0.60</td>
</tr>
<tr>
<td>4. L-Scale</td>
<td>0.75</td>
</tr>
<tr>
<td><strong>B. IPAT Anxiety Scale Questionnaire</strong></td>
<td></td>
</tr>
<tr>
<td>1. Factor Q₃</td>
<td>0.70</td>
</tr>
<tr>
<td>2. Factor C</td>
<td>0.74</td>
</tr>
<tr>
<td>3. Factor L</td>
<td>0.60</td>
</tr>
<tr>
<td>4. Factor O</td>
<td>0.80</td>
</tr>
<tr>
<td>5. Factor Q₄</td>
<td>0.80</td>
</tr>
</tbody>
</table>
Table 4.11

Reliability Coefficients of different measures of Commitment, Challenge and Control as derived from Kobasa’s Hardiness Scale, and Social Support as derived from Sarason’s Social Support Questionnaire

<table>
<thead>
<tr>
<th>Measures</th>
<th>r_{tt}</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Hardiness Scale</td>
<td></td>
</tr>
<tr>
<td>1. Commitment</td>
<td>0.78</td>
</tr>
<tr>
<td>2. Challenge</td>
<td>0.82</td>
</tr>
<tr>
<td>3. Control</td>
<td>0.84</td>
</tr>
<tr>
<td>B. Social Support Questionnaire</td>
<td></td>
</tr>
<tr>
<td>1. Social Support (Quantitative)</td>
<td>0.81</td>
</tr>
<tr>
<td>2. Social Support (Qualitative)</td>
<td>0.78</td>
</tr>
</tbody>
</table>

Table 4.12

Reliability Coefficients of different measures referring to Depression, Burnout, Empathy, Perceived Stress and Internal-External Locus of Control

<table>
<thead>
<tr>
<th>Measures</th>
<th>r_{tt}</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Depression</td>
<td>0.84</td>
</tr>
<tr>
<td>2. Burnout</td>
<td>0.81</td>
</tr>
<tr>
<td>3. Empathy</td>
<td>0.86</td>
</tr>
<tr>
<td>4. Perceived stress</td>
<td>0.78</td>
</tr>
<tr>
<td>5. I-E: Locus of Control</td>
<td>0.75</td>
</tr>
</tbody>
</table>
In addition it can be noted that the obtained reliability coefficients of different anxiety measures (Factors Q₃, C, L, O, Q₄) as derived from IPAT Anxiety Scale Questionnaire range from 0.60 to 0.80. These reliability coefficients are fairly comparable to the reliability coefficients as reported by the authors of the test. They seem to be satisfactory (Table 4.10).

The reliability coefficients of different measures of commitment, challenge and control as derived from Kobasa’s Hardiness Scale ranging from 0.78 to 0.84 are fairly satisfactory. The obtained reliability coefficients are comparable to the reliability coefficients of these measures as reported by earlier researchers. It is equally interesting to emphasize that the obtained reliability coefficients of two different measures of social support satisfy the criterion of adequate psychometric characteristics (Table 4.11).

An examination of Table 4.12 reveals that the obtained test-retest reliability coefficients for different measures referring to depression, burnout, empathy, perceived stress and internal-external locus of control have turned out to be 0.84, 0.81, 0.86, 0.78 and 0.75, respectively. These reliability coefficients are also satisfactory. Overall it can be concluded that different measures used in the current study achieved reasonably high levels of reliability.

4.C) BIVARIATE CORRELATIONS BETWEEN TESTED VARIABLES

The first stage of the data analysis involved the computation of simple bivariate correlations between depression, and personality, hardiness, anxiety locus of control, empathy, social support, burnout, and perceived stress.

Pearson’s product-moment correlations were computed. This was done after ascertaining that the data fulfilled the main requirements underlying the use of Pearson’s correlation.

Table 4.13 shows the bivariate correlations between different variables. Since the number of correlations were large and there were many correlations, only correlations significant at .01 level have been discussed (some significant correlations can be expected to have occurred simply by chance, and thus the probability of Type I error is increased by using .05
Table 4.13
Correlation Matrix
(N : 300)

<table>
<thead>
<tr>
<th>S.No</th>
<th>Variables</th>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
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<th>16</th>
<th>17</th>
<th>18</th>
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<td>-01</td>
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<td>-04</td>
<td>-04</td>
<td>-03</td>
<td>-11</td>
<td>-04</td>
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<td>-07</td>
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<td>04</td>
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<td>10</td>
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<td>-04</td>
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<td>03</td>
<td>11</td>
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<td>-08</td>
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<td>-02</td>
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<td>-03</td>
<td></td>
<td>07</td>
<td>04</td>
</tr>
<tr>
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df : 298, value of r significant at .01 level = .148
Decimals omitted in the correlation matrix

104
level). For convenience and meaningful presentation, the intercorrelations are discussed under natural grouping of various tested scores as below:

(i) **Intercorrelations among psychometric measures of anxiety, neuroticism, psychoticism, extraversion and social desirability**

The intercorrelations among the psychometric measures of anxiety, neuroticism, psychoticism extraversion and social desirability are shown in Table 4.13. An examination of intercorrelations reveals that E-Scale of EPQ correlated insignificantly with P, N, and L Scales of EPQ. However P and N scales correlated significantly, the correlation being .44 (p<.01). Similarly both P and N scales correlated significantly with L-Scale of EPQ, the correlations being .31 (p<.01) and .34 (p<.01) respectively.

A persual of intercorrelation matrix further reveals that out of 10 coefficients of correlation among different components of second-order factor of anxiety, 4 coefficients of correlation have emerged to be significant.

The obtained correlations among different components of second-order factor of anxiety are in the expected direction. The intercorrelations further reveal that E, P, N, and L scales of EPQ showed negligible correlations with different components of anxiety as measured by IPAT Anxiety Scale Questionnaire. The obtained correlations are in line with the correlations reported in the literature.

(ii) **Intercorrelations among control, commitment and challenge**

Kobasa's Hardiness Scale variables were scored for three measures of hardiness, namely – control, commitment, and challenge. These three dimensions of hardiness were correlated. The intercorrelations among these three indices of hardiness were found to range from .37 to .54 (p<.01).
The coefficients of correlation involving control and commitment as well as control and challenge were found to be .54 and .37 respectively. The coefficient of correlation between commitment and challenge was found to be .44 (p<.01). Interestingly these three dimensions of hardiness showed negligible correlation with locus of control as measured by Rotter's Internal-External Scale.

(iii) Correlation between burnout and perceived stress

An examination of intercorrelation matrix reveals positive and significant correlation between burnout and perceived stress (r=.40, p<.01). Burnout failed to correlate with different variables referring to personality, hardiness, and social support.

Burnout is work related stress syndrome characterized by depersonalization, emotional exhaustion, cynicism and loss of personal accomplishment (Maslach & Jackson, 1981). Stress response to work are associated with decline in professional effectiveness (Arsenault and Dolen, 1983) and work satisfaction (Duxburg, Armstrong, Drew, & Henly, 1984) and with increased absenteeism (Duxburg & Theissen, 1979) and illness (Maslach & Jackson, 1981). Burnout professionals are also thought to be sensitive and empathic with clients (Drew, 1986; Cherniss, 1980). The burnout phenomenon is, therefore, costly for the individual practitioner, clients, employing agencies, the profession and society. However, the obtained significant correlation (r=.40, p<.01) between burnout and perceived stress is in the expected direction.

(iv) Correlation between two measures of social support

As discussed in chapter III two indices of social support were derived by using social support questionnaire. The correlation between two indices of social support has been found to be positive and significant (r=.17, p<.01). Although the obtained coefficient of correlation is significant, it cannot be considered as high. Therefore, the two indices of social support seem to lack substantial overlap. The obtained correlation is in the expected direction.
(v) Correlation of depression with different variables

An examination of Table 4.13 reveals that depression as revealed by Zung's Self Rating Depression Scale correlating negatively with empathy \((r = -.34, p < .01)\) and positively with perceived stress \((r = .29, p < .01)\). Interestingly depressive measures showed negligible correlation with all other variables included in the current study.

4.D) STRUCTURAL RELATIONSHIP AMONG THE TESTED VARIABLES

The main objective of the study was to identify the correlates of depressive symptomatology among nurses. Intercorrelations among different variables as discussed in the preceding paragraphs yielded by the pattern of intercorrelations among different variables, despite its significance, has to be considered more or less suggestive and diffuse. The main reason for this is the possible existence of unknown overlap among variety of variables included in the study, which may tend to eclipse the true relationships existing between different measures. This overlap needs indeed be partialled out in order to have a clearly structured and precise picture of the genuine relationships existing between them. In order to accomplish this, as well as to eventually achieve a parsimonious statement of the interrelationships as indicated in a welter of intercorrelations, the technique of factor analysis was used. Moreover, it will help in synthesizing wide areas of behaviour associated with depression. The analysis, it is hoped, will also throw some light on the nature of measurements made by different tests used in the present study.

Keeping in view what has been said in the preceding paragraph, the intercorrelations among the tested variables were factor analysed by the principal component method (Hotelling, 1935) with unities in the diagonal. Following Kaiser's (1960) recommendation only those factors were retained for further rotation which had latent roots \(> 1.00\). Following this procedure nine factors were extracted. The unrotated factor matrix and rotated factor matrix are shown in Tables 4.14 to 4.15. These factors have been discussed in the subsequent pages.
Table 4.14
Factor Matrix (Unrotated)
(N : 300)

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Decimals omitted in the factor matrix
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(N : 300)

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% Contribution

|                  | 12.68 | 10.52 | 7.52 | 7.10 | 6.52 | 6.26 | 6.10 | 5.57 | 1.68 | 64.15 |

Decimals omitted in the factor matrix
INTERPRETATION OF FACTORS

(i) FACTOR I

The significant factor loadings are on the following variables:

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<th>Factor Loading</th>
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<tr>
<td>Perceived Stress</td>
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The pattern of factor loadings on factor I clearly suggests that Factor I emerges clearly as a factor of depression, having a significant factor loading of .85 on depression as derived from Zung’s Self Rating Scale. Empathy and perceived stress have also shown significant loadings on this identified factor of depression. The nature of factor loadings reveals:

1. Depression is associated negatively with empathy.
2. Depression is associated positively with perceived stress.

These two findings need closer scrutiny in view of the focal theme of the present study.

Occupational Health (OH) as an area of study is acquiring increasing importance due to its social and economic impacts. Enlightened approaches to management view, the health of employees as a major asset to be managed carefully. With the industrialization of the developing world, the emphasis on sound OH practices has acquired a global significance as witnessed by national and international conferences on the topic worldwide.

While much of the work on OH deals with the physical health of workers, there is a small, albeit, vocal group of researchers who focus on aspects of occupational mental health (OMH). In fact, the importance of OMH was clearly articulated by Dr. Johannes Siegrist during his keynote address at the Stockholm Conference in 1996. Typically OMH deals with various aspects of work-related stress, depression and burnout. There is a considerable body of knowledge on work-related stress and burnout especially from the developed world (Molassiotis & Haberman, 1996; Fang & Baba, 1993; Jamal
But research on work-related depression is of recent origin (Galperin & Baba, 1994). Nevertheless, the social costs of depression in the United State have been estimated to be around $43 billion a year. This includes among other things, absenteeism, voluntary and involuntary turnover, loss of productivity – all of which have serious implications for the world of work (Jamal & Baba, 1992b; Baba & Jamal, 1991). Despite this observation, very little is known systematically about depression in the work place. Even more glaring is the near total absence of research on this topic in the developing world (Zanotti, 1996).

Nursing within the last 20 years has firmly embraced the idea that practice should be based on substantive research. Yet many of the issues with which modern nursing is grappling encompass complex multifaceted aspects which are difficult to conceptualise or define. Stress is one such concept which has been increasingly invoked in both health care and lay discourses as an explanation for illness and general misfortune. A number of models of stress have been proposed which have to a greater, or lesser extent been adopted by the lay public. In many respects nursing models of health and illness have more in common with lay, rather than biomedical, conceptualizations of illness aetiology. However, it is unclear to what extent nursing, lay and biomedical ideas about stress overlap (Mulhall, 1996).

Stress can be defined as a condition in which there is a marked perceived discrepancy between demands on an individual and the individual's ability to respond, the consequences of which may be detrimental to future conditions essential for biopsychosocial equilibrium and general well-being. The individual's response to the stressful situation is dependent on a variety of factors including the extent of the demand, their own personal characteristics and coping resources, their personal or environmental restrictions with regard to the situation and the encouragement and support received from others. Recently there has been more attention focused on stress in health professionals, including mental health specialists, since the delivery of mental health services can have various negative effects on its providers (Moore & Cooper, 1996; Corrigan, 1993; Rees & Cooper, 1992). The interpersonal contact is often emotionally charged with feelings of tension, anxiety, hopelessness, embarrassment, fear and sometimes even

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hostility. This source of chronic emotional stress can lead to burnout and ultimately affect the overall quality of mental health care.

Recent years have witnessed a burgeoning interest in stress and its potential to affect health. However, as with the concept of health itself, stress is prone to woolly definitions and imprecise meanings. Much as health has been described as a discourse it is still in the process of fabrication (Beattie et al., 1993). Stress is still subject to multiple explanations from a diverse set of academic viewpoints. Stress needs no introduction, it is familiar to professionals and layman alike, it is understood by all, but defined satisfactorily by none. A plethora of disciplines – psychology, psychiatry, nursing, medicine, sociology, anthropology, and pharmacology have studied stress, each with their own objectives and particular methodologies. Indeed, between 1987 and 1992 the psychological literature alone, cites 10,385 articles related to this subject (Mulhall, 1996). The concept of stress is however, not confined to the professional discourse, it is widely invoked also by lay people as an explanation for certain forms of illness. A relationship with excessive work, modern living, type ‘A’ personality, executive life style, potentially stressful events and so on are suggested and this view is reinforced through television programmes, magazine articles and numerous books written by professional health care workers and lay people (Cox, 1992).

Yet, although a multitude of research has been undertaken in this area, the ability of stress to produce illness remains unclear. Furthermore despite the volume of research conducted, it is evident that the concept of stress remains ill defined and there is little consensus as to exactly what the term refers to. As Cox (1992), notes “the varied influx of workers into stress research has resulted in a grand alliance and confusion of terminology”. Similarly, consensus on what constitutes effective coping still alludes the research community. Within nursing, several authors have contributed to the literature concerning not only stress, but other related concepts also such as anxiety, coping, and hardiness (Carson & Fagin, 1995; Bailey & Clarke, 1989; Astbury, 1988; Johnson, 1986; Sutterley, 1986; Zeimer, 1982). In addition, a number of nursing models focus on stress, conceptualizing it as a state of imbalance, which may respond to specific ameliorating interventions (Neuman, 1980; Scott et al., 1980). Nursing as a discipline has firmly
embraced the ideology of holism, and its fundamental precept that health and illness are the synthesis of not only physical, but also psychological, social, cultural and spiritual well-being. Indeed it is a espousal of an interactional and holistic model of health and well-being (Sutterley 1986), which leads to claim that nurses are “uniquely qualified to practice stress management”.

There is growing evidence to indicate that mental health professionals have particular vulnerabilities to stress, which, if not appropriately dealt with, can lead to chronic stress and burnout (Cushway, Tyler & Nolan, 1996). While mental health professionals may be subjected to similar organizational stressors as other health workers, they may face an additional burden when dealing with troubled persons over lengthy periods of time (Moore & Cooper, 1996). Overriding common factors leading to burnout in these professionals are their constant dealing with the emotional pain of others, their inability to draw demarcation lines in their professional interactions, as well as their non-reciprocated constant attentiveness to patients' problems and needs.

Mental health nurses are exposed to a variety of stressors involved in general nursing including inadequate staffing, responsibility for others and interpersonal conflicts (Bai, 1989; Jones, 1987; Numerof, 1983; Numerof & Abrams, 1984). Nurses report a higher level of stress than any other medical group (Rees & Cooper, 1992). In data presented from three research studies on stress, coping and burnout reviewing 648 mental health nurses working in hospital wards, it was found that the main stressors were related to staff shortages, health service changes, poor morale and not being notified of changes before they occurred (Fagin et al., 1996). Furthermore differences in coping skills were found across studies, consistently showing the group with the highest stress scores also having the lowest coping skills scores. All three studies confirmed that stress is a problem for ward-based mental health nurses (Fagin et al., 1996). Cushway et al. (1996) developed a 42-item stress scale for mental health professionals and found that the major source of stress for mental health professionals and for mental health nurses was connected to the issues of their difficulties in handling potentially violent patients or dealing with difficult patients in the context of scarce staff resources. Dawkins, Depp & Selzen (1985) used the Social Adjustment Scale to tap stressors and found that the most stressful situations were caused by
not being notified of changes in their work before they occurred, and dealing with people in key management positions who were unable to make decisions. Interestingly Dawkins et al found that patient issues were not necessarily high on the list of stresses, an observation while was confirmed by Bai (1989). Furthermore psychiatric nurses working in closed psychiatric wards are exposed to high levels of stress. This may be due to treating very disturbed psychotic patients coupled with the threat of physical violence (Whittington & Wykes, 1994). Of course the milieu in which nursing is practised may affect the extent of the violence found, since this phenomenon is probably different for community mental health nurses compared with nurses working in in-patient psychiatric settings. However, violence can undermine the professional self-image of the psychiatric nurse as well as that of the rest of the therapeutic team, diminishing motivation and jeopardizing their well-being (Durst, Oren, Vass & Ginath, 1991). A recent study reported that ongoing stress affected mental health nurses in terms of high absence rates, lower self-esteem and personal unfulfilment (Fagin, Brown, Borbett, Leary & Carson, 1995). It should be pointed out that there is no clear consensus among investigators about the sources of stress for mental health nurses. It has been reported that in some working environments the most often reported stressors for nurses are extrinsic to their work, related to working conditions and relationships with management (Fagin et al., 1996).

The above mentioned discussion clearly supports the obtained positive association of depression with perceived stress. The obtained negative association of empathy with depression is also a interesting finding. The obtained negative association can be properly understood in the context of following observations:

The concept has taken several different nuances of meaning over the time. The Encyclopedia of Psychology, ‘Empathy’ is generally understood to refer to one person’s vicariously experiencing the feelings, perceptions and thoughts of another (Orsine, 1984). With in this broad definition, various traditions have emphasized different aspects of the empathetic situation and attributed different roles to empathy in the therapeutic encounter.

Affect and cognition are potential object of empathy. In the humanistic movement in psychology, the affective component of empathy is emphasized
and the empathetic relationship in and of itself, is considered as healing. Rogers said, because empathetic understanding is rewarding, “I would like to reduce the barriers between others and me” and “My (empathetic) understanding of these individuals permits them to change” (Rogers, 1961).

The conception of empathy in this movement is fairly conventional. Jordon said, “Empathy is the affective cognitive experience of understanding another person”. Theorists differ in the significance assigned to empathy in human development and psychological well being and basic to this theory is the assumption that the ‘self’ is organized and developed through practice in relationships, where the goal is increasing the development of mutually empathetic relationship.

Empathy is a personality attribute involving the capacity to respond emotionally, cognitively, and communicatively to other persons without loss of objectivity (Berger, 1987; Zderad, 1969). Empathy is linked with helping behaviour (Barnett, Howard, King, & Dino, 1981; Batson, Duncan, Ackerman, Buckley, & Birch, 1981), and with more effective professional functioning (Davitz & Davitz, 1981; C.L. Williams, 1979), and is, therefore, nearly universally valued by the helping professions. Nevertheless, research findings related to empathy levels of helping professionals have been contradictory. Education and experience, for example, were negatively correlated with empathy (Khajavi & Hekmat, 1971; Carkhuff, 1969), whereas empathy levels of nursing students did not differ by educational level (Rogers, 1986), and empathy levels of staff nurses correlated positively with education (Forsyth, 1979).

The importance of caregiver empathy in helping relationships has been stressed in many studies (Raudoms, 1993; Reid-Ponte, 1992; Mehrabian, Young & Sato, 1988; LaMonica, Wolf, Madea, & Oberst, 1987). Helping relationships can be any kind of interpersonal alliance in which one person assists another to fulfill his or her needs and may include both formal (professional) and informal caregiving relationships. The distinction between formal and informal caregiving can be made on the basis of payment; activities for which one is paid generally are considered to be formal (Meshefedjian, McCusker, Bellavance, & Baumgarten, 1998). For both forms of the caregiving relationship, empathy has been identified as a key ingredient
(Barrett-Lennard, 1981; LaMonica, Carew, Winder, Haase, & Blanchard, 1976; Kalisch, 1971; Carkhuff, 1969) and has been shown to increase the effectiveness of the helping behaviours (LaMonica et al., 1987).

The positive influence of empathy on patient outcomes (Reid-Ponte, 1992; Warner, 1992; LaMonica et al., 1987) and on formal caregivers themselves (Astrom, Nilsson, Norberg, & Winblad, 1990; Williams, 1989; Bagshaw & Adams, 1986) has been well documented.

Empathy in a patient-staff relationship is important, i.e. the caregiver can experience the patient's feelings in a care situation and assist him with warmth and understanding. Empathy could be defined as an ability to "place oneself mentally and emotionally in the world of another person, to apprehend another's condition and state of mind, to communicate understanding back to the other and perceive his reaction to it" (Bagshaw, 1982; LaMonica, 1981; Rogers, 1975). The caregiver's empathic ability depends on factors such as their personalities and their physical and mental health (Maslach, 1982; Pines et al., 1981; Rogers, 1975; Bergin and Jasper, 1969). The caregiver's attitudes towards the patients are important as they show how the patient is perceived by the caregiver. Attitudes can be defined as composed of cognitive, affective and conative components. The caregiver's intention to behave or her actual behaviour toward the patient are seen as consequences of her attitudes (Lemon, 1973).

Bagshaw and Adams (1985) found among nursing staff in nursing homes in the U.S.A. that Registered Nurses (RNs) were less negative towards the elderly than nurses (LPNs) and nurse's aides. In a Swedish study a larger proportion of staff in working geriatric care were found to have positive attitudes towards demented patients than staff working in acute care (Astrom et al., 1987). Positive attitudes have been found to relate to therapeutic orientation and high empathy while negative attitudes relate to the experience of burnout in the staff (Bagshaw, 1982; Pines et al., 1981; Rogers, 1975).

The above observations explains the obtained negative association of empathy with depression in the current study. Empathy is a personality attribute involving the capacity to respond emotionally, cognitively, and communicatively to others without loss of objectivity (Berger, 1987; Zolerad,
Empathy is linked with helping behaviour (Barnett, Howard, King, & Dino 1981; Batson, Duncan Ackerman, Buckley & Birch, 1981) and with more effective professional functioning (Davitz & Davitz, 1981; Williams, 1979) and is, therefore, nearly universally valued by the helping professions. Research findings related to empathy levels of helping professionals have been contradictory. Education and experience were negatively correlated with empathy (Khajavi & Hekmat, 1971; Carkhuff 1969), whereas empathy levels of nursing students did not differ by educational level (Roger, 1986) and empathy level of staff nurses correlated positively with education (Forsyth, 1979).

(ii) FACTOR II

The significant factor loadings are on the following variables:

<table>
<thead>
<tr>
<th>Variables</th>
<th>Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>.76</td>
</tr>
<tr>
<td>Commitment</td>
<td>.80</td>
</tr>
<tr>
<td>Challenge</td>
<td>.72</td>
</tr>
<tr>
<td>Burnout</td>
<td>-.36</td>
</tr>
</tbody>
</table>

An examination of factor loadings mentioned above reveals that Factor II has shown significant marked factor loadings on three dimensions of hardiness, namely control (.76), commitment (.80) and challenge (.72) as measured by Kobasa’s Hardiness Scale. The factor has also shown significant factor loading on burnout (-.36).

The pattern of factor loadings reveals that there is substantial overlap among the three dimensions of hardiness. The nature of factor loadings reveals that control, commitment and challenge refer to a generalized factor of hardiness. It is difficult to treat control, commitment and challenge as independent dimensions of hardiness. Further, these three dimensions of hardiness have been found to be negatively related to burnout, the negative associations suggest that nurses high on hardiness tend to be low on burnout.

It is equally significant to note that depression as measured by Zung’s Self Rating Depression Scale has failed to show significant loading on this
identified factor of hardiness, suggesting thereby lack of association between hardiness and depression.

(iii) **FACTOR III**

The significant factor loadings are on the following variables:

<table>
<thead>
<tr>
<th>Variables</th>
<th>Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor Q₃</td>
<td>.64</td>
</tr>
<tr>
<td>Factor C</td>
<td>.77</td>
</tr>
<tr>
<td>Factor L</td>
<td>.54</td>
</tr>
</tbody>
</table>

A perusal of factor loadings on Factor III reveals that Factor III has brought together three different components of second-order factor of anxiety, namely Factor Q₃, Factor C, Factor L derived from IPAT Anxiety Scale Questionnaire. The positive association among these factors is in the expected direction since they are part of second order factor of anxiety.

Interestingly, depressive measures have shown non significant loading on this factor, suggesting thereby lack of association between depression and three components of anxiety as derived from IPAT anxiety questionnaire.

(iv) **FACTOR IV**

The significant factor loadings are on the following variables:

<table>
<thead>
<tr>
<th>Variables</th>
<th>Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor L</td>
<td>-.27</td>
</tr>
<tr>
<td>Factor O</td>
<td>-.71</td>
</tr>
<tr>
<td>Factor Q₄</td>
<td>-.75</td>
</tr>
</tbody>
</table>

A perusal of factor loadings on Factor IV reveals that Factor IV has also brought together three different components of anxiety Factor L, Factor O, and Factor Q₄ derived from IPAT Anxiety Scale Questionnaire. The positive association among these factors is in the expected direction since they are part of second order factor of anxiety.
Interestingly, depressive measures have shown non significant loading on this factor, suggesting thereby lack of association between depression and three components of anxiety as derived from IPAT anxiety questionnaire.

(v) FACTOR V

The significant factor loadings are on the following variables:

<table>
<thead>
<tr>
<th>Variables</th>
<th>Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extraversion (EPQ)</td>
<td>.72</td>
</tr>
<tr>
<td>Empathy</td>
<td>.50</td>
</tr>
<tr>
<td>Burnout</td>
<td>-.40</td>
</tr>
</tbody>
</table>

Factor V has brought together three variables namely, extraversion (.72), empathy (.50), and burnout (-.40). The structure of factor V reveals the following main findings:
1. Extraversion is associated positively with empathy and negatively with burnout.
2. Empathy is associated negatively with burnout. The obtained relationship of empathy with burnout and extraversion has also been found in earlier researches.

(vi) FACTOR VI

The significant factor loadings are on the following variables:

<table>
<thead>
<tr>
<th>Variables</th>
<th>Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Support (Quantitative)</td>
<td>.79</td>
</tr>
<tr>
<td>Social Support (Qualitative)</td>
<td>.64</td>
</tr>
</tbody>
</table>

Factor VI brings together two indices of social support and may be labeled as social support. Interestingly, none of the measures of the depressive tendencies and personality have shown significant loadings on this identified factor of social support. This is a peculiar finding. Possibly, social support which has been found to be a significant correlate of depression in adults is not of relevance among nurses. The factor structure, however,
supports Kumari & Sharma (1990) conclusion about a very high correlation between these two measures of social support in Indian culture. Further, it raises some doubt on the utility of scoring these two indices of social support separately.

(vii) FACTOR VII

The significant factor loadings are on the following variables:

<table>
<thead>
<tr>
<th>Variables</th>
<th>Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neuroticism: N-Scale of EPQ</td>
<td>.78</td>
</tr>
<tr>
<td>Social Desirability: L-Scale of EPQ</td>
<td>.71</td>
</tr>
</tbody>
</table>

An examination of above mentioned factor loadings reveals that Factor II has brought together two measures of personality derived from Eysenck Personality Questionnaire, the two measures referred to N-Scale and L-Scale. It implies positive association of neuroticism with social desirability. This association is in the expected direction since subjects high on neuroticism are shown to be high on social desirability. It is equally significant to emphasize that depressive measures have failed to show significant loadings on this factor, suggesting thereby lack of association of depression with neuroticism and social desirability.

(viii) FACTOR VIII

Factor VIII is clearly a factor of locus of control showing no relationship with other variables included in the domain of the present study.

(ix) FACTOR IX

The factor has shown significant loading (though very low) on empathy. From this factor structure it is difficult to interpret factor IX keeping in view the focal theme of the current study.
CONCLUSION

Overall it can be concluded that the present study has shown some interesting results in the sense that depression as derived from Zung's Self Rating Depression Scale is associated negatively with empathy and positively with perceived stress. Among nurses empathy and perceived stress are important variables relating to depression. Empathy has been found to play a positive role while perceived stress has been found to play a negative role so far as depression in nurses is concerned.

The current study has revealed the importance of empathy and perceived stress in depression among nurses. Since empathy is negatively correlated and perceived stress is positively correlated to depression among nurses. The high empathy persons may be at particular risk and need greater support as they enter in professional practice. The role of empathy and perceived stress has been discussed at appropriate places in the light of relevant constructs involving empathy, perceived stress, and depression among nurses.