CHAPTER-IV
DESIGN AND METHODOLOGY

The present study was designed to examine the factorial structure of the measures of emotional intelligence, personality and social intelligence. The methodology used to meet this research objective has been described here in this chapter.

DESIGN

The study was conducted by following a Psychometric Simultaneous Uncontrolled design (Cattell, 1966). The study utilized one group of subjects and they were observed on 26 variables through standardized measures.

SAMPLE

The present study was conducted on a randomly drawn sample of 286 (162 male and 124 female) subjects in the age range of 19.5 to 23.5 years. The subjects were drawn randomly from various undergraduate and post-graduate classes in Govt. College, Gurgaon; Govt. College, Bhiwani; University College and University Teaching Departments, KUK. The sample was drawn using the technique of cluster random sampling. The selected sample covered the people from low socioeconomic status to upper middle socioeconomic status and they came from a wide range of demographic settings.
**Table 1. College-wise split of the sample**

<table>
<thead>
<tr>
<th>Dept./College</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Govt. College, Gurgaon</td>
<td>40</td>
<td>31</td>
<td>71</td>
</tr>
<tr>
<td>Govt. College, Bhiwani</td>
<td>43</td>
<td>26</td>
<td>69</td>
</tr>
<tr>
<td>University College, Kurukshetra</td>
<td>38</td>
<td>28</td>
<td>66</td>
</tr>
<tr>
<td>University Teaching Departments, KUK</td>
<td>41</td>
<td>39</td>
<td>80</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>162</td>
<td>124</td>
<td>286</td>
</tr>
</tbody>
</table>

**MEASURING INSTRUMENTS**

Following measures were used in the present study:

1. **Emotional Intelligence Scale (EIS).**
2. **Social Intelligence Scale (SIS)**
3. **NEO-Five Factor Inventory (NEO-FFI).**
4. **Structure of Temperament Questionnaire.**

**I. Emotional Intelligence Scale:**

The emotional intelligence of the subjects was assessed through a five-factor scale. The EI scale modeled after Schutte et al. (1998) is based on the model of emotional intelligence developed by Salovey and Mayor (1990). The scale comprises 70 items covering all the five dimensions of Salovey and Mayor’s model. The dimensions of emotional intelligence covered by the scale are ‘Self Awareness’, ‘Managing Emotions’, ‘Motivating Oneself’, ‘Empathy’, and ‘Handling Relationships’. The items of the scale are multiple choice, the subject is required to check one of the 5 response choices that describe his behavior the best.

Factor analysis of the responses provided an evidence for construct validity of the scale. Additional validation study shows
that the scores on the scale correlated substantially with a number of theoretically related construct including alexthymia, attention to feelings, clarity of feelings, mood repairs, optimism and impulse control. However the test scores were not related to cognitive ability. It provided evidence satisfactory for convergent and divergent validity. Further the emotional intelligence scores on this measure were positively associated with first-year college grade and the ratings of students counsellors. Internal consistency coefficients for different dimensions of the scale range from .76 to .82. The test-retest reliabilities were also high, ranging from .74 to .82.

II. Social Intelligence Scale:

Social intelligence of the subjects was assessed through Chadha and Ganesan's (1986) Social Intelligence Scale (SIS). SIS is a group test designed to measure the social intelligence of the adults. The test consists of eight independent dimensions named-Patience, Co-operativeness, Confidence, Sensitivity, Recognition of social environment, Tactfulness, Sense of humour and Memory. In all there are sixty-six items arranged in five parts.

The split-half reliability coefficients of different dimensions of the scale range between .89 and .96 as reported by the authors. The test-retest reliability coefficients range from .84 to .97 in a sample of 150 subjects.

The validity of the test has been computed in terms of empirical validity and cross validity. For empirical validity, the author's used "Social Intelligence Test" by Moss and Hunt
(N=50). The total score of SIS has been found highly correlated with SIT i.e., .70. The cross validities of the test range between .75 and .95. Thus the scale may be taken as a fair measure of social intelligence.

III. NEO-Five Factor Inventory (NEO-FFI):

The NEO-FFI form S is a fair measure of the five major dimensions of personality and some of the more important traits that define each dimension. The NEO-FFI is a concise measure of five broad personality dimensions (Costa and McCrae, 1992). When it appeared in 1985, the NEO-PI had well-researched scales to measure the facets of Neuroticism (N), Extraversion (E), and Openness (O), but only global scales to measure the factors of Agreeableness (A), and Conscientiousness (C). In 1989 several enhancements of the NEO-FFI were offered to the users, but the inventory itself remained unchanged. The NEO-FFI completes the development of the instrument by adding A and C facet scales that were implicitly promised by the domain-and-facet model on which the NEO-FFI was based and that were explicitly promised in the NEO-FFI professional manual (Costa and McCrae, 1992). In addition, 10 of the original N, E, and O items were replaced in the NEO-FFI to allow more accurate measurement of several of their facets. The NEO-Five Factor Inventory is a 60-item version of the NEO-PI that is scored for the domains only. The NEO-FFI is useful when time available for testing is limited and global information on personality is considered sufficient. The NEO-FFI, form S provides comprehensive study as Big five factors.
The reliability of NEO-FFI scales was ascerained by employing two method viz., test-retest and Cronbach’s coefficient alpha with an interval of 60-70 days (Kumar, 2000). The test-retest coefficient were .723 for agreeableness, .751 Conscientiousness, .757 Extraversion, .701 Neuroticism and .776 for openness. The coefficient alpha estimate was strikingly high these were .99 for A, C and O factor and .98 for factor E and N.

The reliabilities of the five scales were assessed in terms of internal consistencies and test-retest. The alpha coefficients for the individual facet scales ranged from .56 to .81. The full-scale coefficient alphas ranged from .86 to .95 (Costa et. al. 1991). Other studies using the NEO-FFI have reported very similar values for the samples of clinical cases and college students. The test-retest reliability (with three months interval) of NEO scales was obtained from a college sample. Coefficients were found to be .79, .79, .80, .75, and .83 for N, E, O, A and C scales, respectively. The construct validity of the five scales was ascertained through factor analyses, in addition it was assessed through external evidence. John (1989) provides a strong evidence of convergent and discriminant validity of all the five scales.

In a number of other studies (e.g., Goldberg, 1989; Traphell and Wiggins, 1990) demonstrate that a large set of objective scale recovered the same five factors, and showed strong correlation between their adjective measures and NEO-FFI scales.
IV. Structure of Temperament Questionnaire (STQ):

The Structure of Temperament Questionnaire (STQ) developed by Rusalov (1989) is based on Anokhin's functional system. An 8-scale questionnaire of the structure of human temperament (STQ) was constructed by using latent structure analysis technique. There are 105 questions with Yes-No answer format. Each dimension is comprised of 12 items only. Ruslov (1989) has proposed a structure of temperament comprising four traits i.e., ergonicity, plasticity, tempo and emotionality. Each dimension consists of two sub dimensions: object oriented and social oriented or communicative. The sub dimensions are connected with two main spheres of human interaction, object world and society. In addition to these temperament scales one lie scale (social desirability) of 9 items adapted from Eysenck Personality Inventory was also included.

The STQ has been developed and used successfully on adult workers in Russia. The questionnaire is self-administering and has no fixed time limits. Ruslov (1989) established construct validity of STQ by correlating its scale with Pavlovian Temperament Survey (PTS). The reliability estimates of all the four scales have been reported to be very satisfactory.

ADMINISTRATION AND SCORING:

The subjects were contacted in their respective teaching departments/colleges to seek their willingness to participate in the study. After getting their willingness, the date and time for psychological testing was decided. All the subjects were administered Emotional Intelligence Scale, Social Intelligence
Scale, NEO-Five Factor Inventory and Structure of Temperament Questionnaire. All the measures being group tests these were administered in-group setting with 10 to 15 subjects in one batch. The testing sessions, in every case, were held in respective classrooms with adequate facilities for ventilation and proper sitting arrangements.

The subjects were told that they were part of an experiment although the scores on the tests would not affect their class grades. They were also told that their scores would be kept secret so that they could complete the test without any fear or hesitation. All the four tests were administrated in accordance with the procedure described in the test manual or as described by the test author/s. Although there was no time limit to administer the test the subjects were asked to complete the test as early as possible. To make the task easier the instructions were also explained verbally. All the subjects gave their response in the separate answer sheet in the presence of the investigator. The subjects were very co-operative and generous to take the tests.

The testing procedure was all through uniform.

The responses of the subjects were scored as per the scoring procedure described by the test authors or as in the respective test manuals. Since all the four tests were objectively scored, scoring was accomplished through stencil keys.

Emotional Intelligence Scale (EIS) was scored on a five-point rating pattern. Scores are reversed in the case of negative items. The scoring key is as under:
Self-awareness: 1(-), 4(+), 6(-), 26(-), 40(+), 41(+), 42(-), 48(+), 49(+) and 61(-).
Managing Emotions: 5(-), 7(-), 8(-), 9(-), 10(-), 13(-), 18(+), 20(+), 22(+), 23(-), 36(+), 39(-), 43(-), 46(-), 47(-), 51(+), 53(-), 55(+), 57(-), and 65(+).
Motivating Oneself: 11(+), 14(+), 17(+), 19(+), 25(+), 29(-), 33(+), 37(+), 38(+), 50(+), 52(-), 60(-), 62(-), 66(+), and 70(+).
Empathy: 16(-), 27(+), 28(+), 30(+), 34(+), 44(+), 45(+), 59(-), 67(-), and 69(+).
Handling Relationships: 15(-), 21(+), 24(+), 31(-), 35(+), 56(+), 58(+), 63(-), 64(+), and 68(+).

The scoring of Social Intelligence Scale (SIS) was accomplished by assigning a score of 1, 2 or 3 as per the key given below:

Co-operativeness:
Items:

1, 5, 9, 12, 14, 16, 17, 21, 22, 28, 29. Score
b, a, a, a, c, a, c.

b, c, c, c, a, c, c, a, c.

a, a, a, b, c, b, b, b, a.

Sensitivity:
Items:

2, 6, 8, 18, 20, 25, 27, 31, 36. Score
b, a, b, a, a, c, a, b, a.

a b, c, b, b, a, c, a, b.

c, c, a, a, c, b, b, c, c.
Confidence:

Items:

<table>
<thead>
<tr>
<th>Items: 3, 7, 11, 19, 23, 24, 26, 32</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>c, c, c, c, a, c, c, c</td>
<td>1</td>
</tr>
<tr>
<td>a, b, a, a, b, b, b, a</td>
<td>2</td>
</tr>
<tr>
<td>b, a, b, b, c, a, a, b</td>
<td>3</td>
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</table>

Patience:

Items:

<table>
<thead>
<tr>
<th>Items: 4, 10, 13, 15, 30, 33, 34, 35</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>a, c, c, b, a, b, a, a</td>
<td>1</td>
</tr>
<tr>
<td>c, b, a, a, c, c, b, c</td>
<td>2</td>
</tr>
<tr>
<td>b, a, b, c, b, a, c, b</td>
<td>3</td>
</tr>
</tbody>
</table>

Recognition of Social Environment:

Items: 37, 38, 39

<table>
<thead>
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<th>Score</th>
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</thead>
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<tr>
<td>c, b, b</td>
</tr>
<tr>
<td>b, c, a</td>
</tr>
<tr>
<td>a, a, c</td>
</tr>
</tbody>
</table>

Tactfulness:

Give a score of 1 to following responses:

40 (Yes), 41 (No), 42 (No), 43 (Yes), 44 (Yes), 45 (Yes), 46 (Yes).

Sense of humour:

Items: 47, 48, 49, 50, 51, 52, 53, 54

<table>
<thead>
<tr>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>b, a, a, a, b, b, c</td>
</tr>
<tr>
<td>c, c, c, b, a, a, b</td>
</tr>
<tr>
<td>a, b, b, b, c, c, c, a</td>
</tr>
</tbody>
</table>
Memory:

Item No. 55 to 66 One score for each correct recognition.

The scoring of NEO-FFI was accomplished by assigning a score of 5 to “strongly agree”, 4 to “agree”, 3 to “neutral”, 2 to “disagree”, and 1 to “strongly disagree”. The scoring is reversed in the case of negative statement.

Neuroticism: 1(-), 6(+), 11(+), 16(-), 21(+), 26(+), 31(-), 36(+), 41(+), 46(-), 51(+), and 56(+).

Extraversion: 2(+), 7(+), 12(-), 17(+), 22(+), 27(-), 32(+), 37(+), 42(-), 47(+), 52(+), 57(-).

Openness: 3(-), 8(-), 13(+), 18(-), 23(-), 28(+), 33(-), 38(-), 43(+), 48(-), 53(+), and 58(+).

Agreeableness: 4(+), 9(-), 14(-), 19(+), 24(-), 29(-), 34(+), 39(-), 44(-), 49(+), 54(-), 59(-).

Conscientiousness: 5(+), 10(+), 15(-), 20(+), 25(+), 30(-), 35(+), 40(+), 45(-), 50(+), 55(-), 60(+).

In the case of Structure of Temperament Questionnaire a score of 1 is assigned to following keyed responses:

Ergonicity: “Yes” on 4, 8, 15, 22, 42, 50, 58, 64, 98.

“No” on 27, 83, 98.

Social Ergonicity: “Yes” on 11, 30, 57, 62, 67, 78, 86.

“No” on 3, 34, 74, 90, 105.


“No” on 54, 59.

Social Plasticity: “Yes” on 2, 9, 18, 26, 45, 68, 85, 99.

“No” on 31, 81, 87, 93.
Tempo: “Yes” on 1, 13, 19, 33, 46, 55, 77.
   “No” on 29, 43, 70, 94.
Social Tempo: “Yes” on 24, 37, 39, 51, 72, 92.
   “No” on 5, 10, 16, 56, 96, 102.
Emotionality: “Yes” on 14, 17, 28, 40, 60, 61, 69, 79,
   88, 91, 95, 97.
Social Emotionality: “Yes” on 6, 7, 21, 36, 41, 48, 53,
   63, 75, 80, 84, 100.
Lie Scale: “Yes” on 32, 52, 89.
   “No” on 12, 23, 44, 65, 73, 82.

ANALYSES

The scores on all the 26 variables (5 of emotional intelligence, 8 of social intelligence, 5 of personality and 8 of temperament) were analyzed for descriptive statistics and Pearsonian correlation. The 26x26 intercorrelation matrix was subjected to Principal Components Analysis. The obtained factors were rotated to Varimax criterion of orthogonal rotation.