CHAPTER – III
METHODOLOGY

Stress is a matter of perception. Some people rarely feel stress, while others are crippled by it. Keeping in mind that some stress is to be expected in all our lives, it is a sign that we care and are concerned about work, family life and studies. Stress can be a positive force that propels you forward. Many roads to success are laden with difficulties. Avoiding stress is not the answer. The key is in finding the solution.

Keeping “Stress” in mind the present study is undertaken and it tries to study the influence of stress on a number of psychological factors. This chapter describes the methodology used for the study. The sample consists of 150 professional and 150 non-professional college students. The general proforma and tests are used to record ‘stress” in the above sample and to study the effect of stress on personality, self-esteem and academic achievement. The details are presented in the following pages.

Objectives of the Study

1. To study the variation of stress in professional and non-professional college students group.

2. To study the effect of stress on personality of both the groups of students of the sample.
3. To study the variation in personality traits between high and low stress group.

4. To study the effect of stress on academic achievement of students of both the sample groups.

5. To study the effect of stress on the self-esteem of sample sub-group.

Hypotheses

1. There will be variation in the amount of stress experienced by the professional and non-professional college students.

2. There will be impact of stress on the academic achievement of students.

3. There will be variation in personality traits of high and low stress group.

4. There will be impact of stress on the self-esteem of the sample sub-groups.

5. There will be impact of age on the stress of the sample group.

6. There will be impact of gender on the stress of the sample group.

7. There will be impact of socio-economic status on the stress of the sample group.

Research Design

The present study is cross-sectional one, consisting of professional and non-professional students of different age groups (15 to 30 years), of different caste and religions, of males and females, of
different socio-economic status and of belonging to different levels of study course.

The researcher did not manipulate the independent variables as their manifestations had already occurred, thus the study is ex-post facto in nature. However, the dependent variables were carefully chosen and attempts were made to measure them adequately. Further attempts were made to study the impact of stress on these dependent variables of professional and non-professional student sub-group.

Sample Selection

Present study consists of 150 professional students (medical and dental) and 150 non-professional students (arts and science). The four colleges selected for the study were medical, dental, arts and science colleges.

There was random selection of 150 professional students belonging to different years of their study course. Similar method was used for selecting non-professional students also.

The researcher had to make a few visits to the respective colleges to conduct the tests on them. The students were highly co-operative in answering the tests and questionnaire.

Different age groups were automatically incorporated in our study due to selection of students from various years of their study
course. Males and females of different religion, caste and socio-economic status were included.

**TABLE – 1**
Sample Design – College Students

<table>
<thead>
<tr>
<th>Type of samples</th>
<th>High SES</th>
<th>Low SES</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional students</td>
<td>132</td>
<td>18</td>
<td>150</td>
</tr>
<tr>
<td>Non-professional students</td>
<td>75</td>
<td>75</td>
<td>150</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>207</strong></td>
<td><strong>93</strong></td>
<td><strong>300</strong></td>
</tr>
</tbody>
</table>

**Research Tools**

(1) A general proforma was made to record relevant information of the sample group under survey. Along with this general proforma psychological tests were used, which are as follows:

The sixteen personality factor questionnaire (16 PF) developed by R.B. Cattell (1970) was used to measure personality traits of the sample sub-groups. This included both professional and non-professional college students.

The 16 PF test is a multi-dimensional set of sixteen questionnaire scales, arranged in omnibus form. It is designed to make available, in a practicable testing time, information about an individual’s standing on the majority of primary personality factors.
Description of the Scales

The sixteen factor questionnaire developed by R.B.Cattell is used. This questionnaire was designed for use with individuals aged sixteen years and above. This test is an objectively scoreable test devised by basic research to give the most complete coverage of personality in a brief period of time. Inside the test booklet there were a total of 105 questions to study the personality factors of the students. There were three possible answers to every question. The students were asked to read the examples and then to proceed on with the test. A separate answer sheet was also provided to the students. There was no time limit to the test but however the students were asked not to ponder too long on any question and to complete the entire test as quickly as possible. There were no right or wrong answers. This test measures all the sixteen dimensions of personality which are as follows: A : sizoethymia (reserved, detached, critical), B : Dull, C : Lower ego strength (affected by feelings, easily upset), E : Submissiveness (humble, mild, easily led), F : Desurgency (sober, serious), G : Weaker superego strength (disregards rules), H : Threcita (shy, timid, threat, sensitive), I : Harria (tough minded, self-reliant), L : Alexia (trusting, accepting conditions), M : Praxernia (practical, down to earth), N : Artlessness (forthright, genuine), O : Untroubled adequacy (self assured, secure), Q1 : Conservatism of temperament (conservative, respects traditional ideas), Q2 : Group adherence (group dependent, sound follower), Q3 : Low self sentiment integration
(follows own urges, careless of social rules), Q4: Low ergic tension (relaxed, composed).

The 16 PF can be either hand scored with a stencil key or machine scored. Hand scoring includes two cardboard stencil scoring, one covers factors (A, C, F, H, L, N, Q1, Q3) and the other (B, E, G, I, M, O, Q2, Q4). Sum of all the scores forms the total for each factor. Using standardization tables the raw sources were converted to sten scores. A sten score of 5 to 6 is average, 4 or 7 is slightly deviant, 2, 3, 8, 9 are strongly deviant and 1 or 10 are extreme.

The reliability and validity of the scale has been well established by the scale constructor which are very high and have been accepted by the other researchers.

(2) A self concept questionnaire developed by R.K.Saraswat (1984) is used to measure the extent of students self-concept/self-esteem.

(3) The results of the students of previous years were recorded to measure the academic achievement of the college students.

(4) The IPAT anxiety scale developed by Samuel E. Krug, Ivan, H. Scheier and Raymond B. Cattell (1963), (1976) was used to measure anxiety factor of the college students. The term anxiety and stress are used interchangeably. The anxiety is the emotional aspect of stress. It refers to the perception of the situation of whether it is dangerous or threatening to the person. Stress or threat is the objective stimulus
properties of the situation. Speilberger (1972) proposed that the term stress and threat be used to denote different aspects of a temporal sequence of events that results in the evocation of an anxiety reaction. If a situation or thought is perceived as threatening irrespective of the presence of real objective danger, the person who perceives the situation as threatening will experience an increase in anxiety state.

(5) Socio-economic status scale (SES) was used to measure the socio-economic status of the sample group under survey.

Description of the Scales

(1) The sixteen personality factor test was developed by R.B. Cattel (1970). Sixteen personality factor test is a multi-dimensional set of sixteen questionnaire scale arranged in omnibus form. It is designed to make available in a practicable testing time, information about an individual standing on the majority of primary personality factors.

This test is an objectively scoreable test devised by basic research in psychology to give the most complete coverage of personality possible in a brief period of time. Forms A, B, C, D are most appropriate for literate individuals whose educational level is roughly equivalent to that of the normal high school student. Forms E and F are designed for use for individuals with marked educational and reading deficits. The test can be scored by hand or by machine and various types of answer sheets are available for this reason.
The personality factors measured by 16 PF are not just unique to the test but instead situated within the context of the general theory of personality. Nearly 10 years of empirical, factor analytic research preceded the first commercial publication of the test in 1949.

Each factor is listed with its alphabetic designation and brief descriptions of low and high scores. These sixteen dimensions or scales are essentially independent. Any item in the test contributes to the score on one and only one factor.

Table

The primary and secondary source traits covered by the 16 PF Test and the number of items in each form to measure each primary.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Low Sten score Description (1-3)</th>
<th>High sten Score Description (8-10)</th>
<th>Number of items in each form</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Reserved, detached, critical, sloot, stiff Sizothymia</td>
<td>Outgoing, warmhearted, easygoing, participating Affectothymia</td>
<td>10 6 8</td>
</tr>
<tr>
<td>B</td>
<td>Dull Low intelligence (Crystallized, power measure)</td>
<td>Bright High Intelligence (Crystallized, power measure)</td>
<td>13 8 8</td>
</tr>
<tr>
<td>C</td>
<td>Affected by feelings, emotionally less stable, easily upset, changeable Lower ego strength</td>
<td>Emotionally stable, mature, faces reality, calm. Higher ego strength</td>
<td>13 6 8</td>
</tr>
<tr>
<td>E</td>
<td>Humble, mild, easily led, docile, accommodating Submissiveness</td>
<td>Assertive, aggressive, competitive, stubborn Dominance</td>
<td>13 6 8</td>
</tr>
<tr>
<td>F</td>
<td>Sober, taciturn, serious Desurgency</td>
<td>Happy-go-lucky, gay, enthusiastic Surgency</td>
<td>13 6 8</td>
</tr>
<tr>
<td>G</td>
<td>Expedient, disregards rules Weaker superego strength</td>
<td>Conscientious, persistent, moralistic, staid Stronger superego strength</td>
<td>10 6 8</td>
</tr>
<tr>
<td>H</td>
<td>Shy, timid, threat-sensitive Thrictia</td>
<td>Venturesome, uninhibited, socially bold Parmia</td>
<td>13 6 8</td>
</tr>
</tbody>
</table>

Conti...
<table>
<thead>
<tr>
<th>I</th>
<th>Tough-minded, self-reliant, realistic Harria</th>
<th>Tender-minded, sensitive, clinging, overprotected Premsia</th>
<th>10 6 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>Trusting, accepting conditions Alaxia</td>
<td>Suspicious, hard to fool Protension</td>
<td>10 6 8</td>
</tr>
<tr>
<td>M</td>
<td>Practical, &quot;down-to-earth&quot; concerns praxernia</td>
<td>Imaginative, bohemian, absent-minded Autia</td>
<td>13 6 8</td>
</tr>
<tr>
<td>N</td>
<td>Forthright, unpretentious, genuine but socially clumsy Artlessness</td>
<td>Astute, bohemian, socially aware Shrewdness</td>
<td>10 6 8</td>
</tr>
<tr>
<td>O</td>
<td>Self-assured, placid, secure, complacent, serene Untroubled adequacy</td>
<td>Apprehensive, self-reproaching, insecure, worrying, troubled Guilt proneness</td>
<td>13 6 8</td>
</tr>
<tr>
<td>Q1</td>
<td>Conservative, respecting traditional ideas Conservation of temperament</td>
<td>Experimenting, liberal, free-thinking Radicalism</td>
<td>10 6 8</td>
</tr>
<tr>
<td>Q2</td>
<td>Group dependent, a &quot;joiner&quot; and sound follower Group adherence</td>
<td>Self-sufficient, resourceful, prefers own decisions Self sufficiency</td>
<td>10 6 8</td>
</tr>
<tr>
<td>Q3</td>
<td>Undisciplined self-conflict, lax, follows own urges, careless of social rules Low self-sentiment integration</td>
<td>Controlled exacting will power, socially precise, compulsive, following self-image High strength of self-sentiment.</td>
<td>10 6 8</td>
</tr>
<tr>
<td>Q4</td>
<td>Relaxed, tranquil, torpid, unfrustrated, composed Low ergic tension</td>
<td>Tense, frustrated, driven overwrought High ergic tension</td>
<td>13 6 8</td>
</tr>
</tbody>
</table>


Self-concept Questionnaire

The self-concept questionnaire was developed by Raj Kumar Saraswat (1984, 1992). Self-concept has been referred by Lowe (1961) as one's attitude towards self and by Paderson (1965) as an organised configuration of perceptions, belief, feelings, attitudes and values which the individual views as part of characteristics of himself. Rogers (1951) defined self-concept as "An organized configuration of perceptions of the self which are admissible to awareness. It is composed of such elements as the perceptions of one's characteristics
and abilities, the percepts and concepts of the self in relation to others and to the environment, the value quality which is perceived as associated with experiences and objects and the goals and ideas which are perceived as having positive or negative balance”. Saraswat and Gaur (1981) described self-concept as “It is the individual’s way of looking at himself. It also signifies his way of thinking, feeling and behaving”.

An examination of various instruments developed to measure self-concept, reveals that these measures have not incorporated many important components of self-concept presumed in theory and in observation. These measures do not deal with all aspects of self-concept but provide narrow and limited information depending upon purpose and interest of investigators.

Description of Self-concept Inventory

The self-concept inventory provides six separate dimensions of self-concept. They are physical, social, intellectual, moral, educational and temperamental aspects of self-concept. It also gives a total self-concept score. The operational definitions of the dimensions of self-concept dimension measured by this inventory are:

1. **Physical** – Individual’s view of his/her body, health, physical appearance and strength.

2. **Social** – Individual’s sense of worth in social interaction.
(3) **Temperamental** – Individual's view of his / her prevailing emotional state or predominance of particular kind of emotional reaction.

(4) **Educational** – Individual's view of himself / herself in relation to school, teachers, and extra-curricular activities.

(5) **Moral** – Individual estimation of his / her moral worth, right and wrong activities.

(6) **Intellectual** – Individual's awareness of his / her intelligence and capacity of problem solving and judgement.

The inventory contained 48 items. The summation score of all the forty eight items provides the total self-concept score of an Individual. A high score on this inventory indicates a higher self-concept, while a low score shows low self-concept.

**Reliability and Validity**

<table>
<thead>
<tr>
<th>Code No.</th>
<th>Self-concept dimension</th>
<th>No. of items</th>
<th>Reliability co-efficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Physical</td>
<td>08</td>
<td>0.77</td>
</tr>
<tr>
<td>B</td>
<td>Social</td>
<td>08</td>
<td>0.83</td>
</tr>
<tr>
<td>C</td>
<td>Temperamental</td>
<td>08</td>
<td>0.79</td>
</tr>
<tr>
<td>D</td>
<td>Educational</td>
<td>08</td>
<td>0.88</td>
</tr>
<tr>
<td>E</td>
<td>Moral</td>
<td>08</td>
<td>0.67</td>
</tr>
<tr>
<td>F</td>
<td>Intellectual</td>
<td>08</td>
<td>0.79</td>
</tr>
<tr>
<td></td>
<td><strong>Total self-concept</strong></td>
<td><strong>48</strong></td>
<td><strong>0.91</strong></td>
</tr>
</tbody>
</table>
Validity

Expert opinion was obtained to establish the validity of the inventory. 100 items were given to 25 psychologists to classify the items to the category to which it belongs. Items of highest agreement and not less than 80 per cent of agreement were selected. Thus the content and construct validity were established.

(3) The Socio-economic Status Scale

The socio-economic status scale was developed by Gyanendra P. Srivastava (1991) is used. The importance of the scale has been realised by research workers in the fields of psychology, education, sociology, social work and other allied disciplines. Researchers have shown socio-economic status to be related with values, attitudes, child rearing practices, school achievements, etc.

The level of income was used by Taussig as the basis of social stratification. Similarly, Cattell proposed occupation and educational level of the principal bread winner of the family to be the determinant of the social position. Lewis and Dhillon devised a socio-economic status scale for classifying the village families according to their socio-economic status. Trivedi and Pareikh developed a scale which has been widely used to measure the socio-economic status of rural population.
The Scale

The final form of the scale was developed after item analysis of the responses of 370 students on the preliminary form of the scale. Care was taken so that the test does not become lengthy as lengthy tests are time consuming and monotonous. Hence, some items were eliminated and in a few items changes were made in the wording of the sentences. The merit of the scale lies in its objectivity. Only such items have been included on which information can be objectively collected. The scales has the added advantage of being simple.

Components of the Scale

The socio-economic status scale seeks information about the following component variable:

1. **Education** – Within this variable there are eight categories of items which relate to the parental education or of the guardian.

2. **Occupation** – It relates to the primary education of the parent or the head of the family. There are seven categories of items in this variable. 1) High professional category; 2) Semi-professional category; 3) Clerical jobs; 4) Skilled workers; 5) Semi-skilled workers; 6) Domestic servants and 7) Unemployed.

3. **Income** - There are six categories of income groups within this variable.

4. **Cultural Standard** – Within this variable there are three items which are concerned with expenses on newspaper, magazines and expenses in the form of pocket money.
(5) **Social participation** – It consists of two variables, (a) club membership of the parent and (b) membership to one organization, more than one organization, holding office in one organization and holding office in more than one organization.

(4) **IPAT Anxiety Scale**

The IPAT Anxiety scale was developed by Samuel E. Krug, John H. Scheier and Raymond B. Cattell. The ASQ (anxiety scale questionnaire) is only one of the several anxiety measures available from IPAT. When the examiner's interest is in obtaining an anxiety score quickly and under condition where distortion is unlikely to occur the ASQ is appropriate.

The ASQ was developed as a means of getting clinical anxiety information in a rapid objective and standard manner. The scale gives an accurate appraisal of free anxiety level, supplementing clinical diagnosis and facilitating all kinds of research or screening operation where very little diagnostic or assessment time can be spent with each examinee.

The test is easily administered individually or to a large group at one time. It can even be self-administered. The ASQ can be easily scored using a standard key that fits over a test booklet. The scale can be used not only for initial diagnosis but also in follow up for charting progress or change of level with psycho-therapy, medication, change of situation in research or practice.
Reliability and Validity

Two types of reliability estimates have been established by the authors – one is test-retest reliability and other is internal consistency. 0.93 is the test-retest reliability when tested after one week. And 0.92 is the internal consistency reliability using the split-half method with correction for full length test.

(5) - Academic Achievement

Academic achievement is a function of a tangled skein variables many of a non-cognitive character. Studies by Sinha and Sharma (1975), and Simon and Simon (1975) have supported the studies done in the West, which state that differences in self-esteem are associated with differences in academic achievement. American research also concludes and shows that there is a persistent and significant relationship between self-concept and academic achievement.

Procedure

Present study consists of a random selection of college students belonging to professional (medical and dental) and non-professional (arts and science) colleges.

Four different colleges were selected for the study, which included medical, dental, arts and science colleges. Random selection of students was made. The researcher had to make more than three trips to collect the data in each college.
Adequate arrangement were made for collection of data. Well lit classrooms with proper ventilation were selected. Care was taken to see that congenial atmosphere and stress-free environment existed. The students from each year of their study course were selected. A total of 300 students were included for the study (75 students from each of the four colleges).

The general proforma along with the test material was distributed to all the students. The students were explained the purpose of the project and general instructions were read out in English and local language. Continuous supervision was done to assist the student to complete the test. All doubts of the students were dealt with. The students were asked to go through their work in case of any lapse. Finally, the filled proformas were collected from the students. The researcher took care to personally check the proformas submitted before dispatching away the students.

Researcher then did the scoring from the data collected and subjected the same for statistical analysis.

Analysis of Data

Keeping in view the objectives of the study and also the hypotheses stated for the study, the data wee processed with the following statistical methods.

1) ‘t’ and F tests were used for comparing sample sub-groups on stress as well as other dependent variables.
2) Two-way analysis of variance (ANOVA) to investigate independent and interactional effects of stress on dependent variables.

3) Multiple regression analysis is employed to study the contributions of independent variables to the dependent variable.

Significance of the Study

The teachers and parents are expecting high academic standards from the students and also it is expected that the youngsters grow into self-confident, achievement oriented adults. If the inevitable stress is experienced by the growing individuals, the growth of them may be either tilted or stunted. But it is the concern of the researchers and educationists to suggest ways to overcome the stress and the students should grow into healthy and effective adults. For this an attempt will have to be made to identify the groups of students who are really affected by the stressful experiences. Those students will have to be cared and counselled. This study makes an earnest attempt to identity the students who experience the stress because of various stress-inducing factors like types of courses, socio-economic status, age, religion and so on. Obtaining the scientific information relating to the individual’s growth like personality factors, self-esteem and academic achievement is the primary concern of the present study. Based on this scientific information the appropriate coping strategies and counselling methods can be suggested.