CHAPTER - 4

Methods of Investigation
METHODS OF INVESTIGATION

This chapter is deal with the tools used in the present study, scoring of the total sample selection, collection of the date and used statistical techniques.

4.1 Tools Used in the Present Study

The following tools were used in the present study.

- Standardized Raven’s progressive matrices (R.P.M) for finding the intelligence of the students.

- Cattell’s high school personality questionnaire, standardized and translated into Telugu version Form-A (HSPQ) was adopted for finding the 14 personality factors of the students.

- Marks obtained in the quarterly, half yearly and annual examinations of the students in the subjects Telugu, Hindi, English, Mathematics, Science and Social studies have been taken as an index of the student’s academic achievement. This is the standardized procedure following in the state of Andhra Pradesh for finding the academic achievement of the students.

- Standardized socio-economic status format was adopted to know the socio-economic status of the students.

The description of the above tools is given below.
4.2 Raven's Progressive Matrices

For finding intelligence of the high school students the standardized progressive matrices was adopted. The above test is prepared and standardized by Raven, J.C. (1950).

It is a non-verbal test for finding intelligence of the students. The test consists of 60 matrices, or designs, from each of which a part has been removed. The student has to choose the missing insert from 6 or 8 given alternatives. The items are grouped into five series. Viz., Set-A, Set-B, Set-C, Set-D and Set-E. In each of the set contains 12 matrices of increasing difficulty but similar in principle. The first series require accuracy of discrimination. The later, more difficult series involve analogies, figure permutation and alteration of pattern, and other logical relation. The test is administered with no time limit. The test is language, education and culture free test.

Scoring of RPM

In the Raven's progressive matrices, for each matrix 6 or 8 alternative answers are given to the students. They are asked to write one correct answer: Like wise students are required to answer all the 60 questions. After getting the answer sheet evaluation is done with the help of answer key given by the author. Each correct answer provides one mark to the student. Total 60 questions will be evaluated in the same manner and recorded.
4.3 High School Personality Questionnaire (HSPQ)

For assessing personalities in high school students level, the investigator adopted high school personality questionnaire (HSPQ) form—A. The above questionnaire is formed and standardized by Cattell (1950). The above questionnaire contains totally 142 questions and three alternative answers are given to each question. The above questionnaire is translated into Telugu version and standardized by Nagaraju. M.T.V.(2001), department of education, Sri Venkateswara University, Tirupati. The researcher adopted the same questionnaire in the present study for finding the 14 factors of personality of the students.

Selection of the tool (HSPQ)

The investigators aim is to assess the personality of the high school level students of 10th, 9th classes normally having the ages of 14 years to 16 years. HSPQ is applicable to the students from 12 to 18 years and HSPQ is a culture free test. It also gives the scores of 14 dimensions of personality. Theoretically HSPQ is supported by Stern (1921) and Allport (1937) in the following works.

Allport asserts “traits are not discovered by inference by reasoning, not by faith, not by naming and are themselves never directly observed. They are discovered only through an deductions made necessary by the provable consistency of the separate observable acts of behavior.

Stern says “we have the right and responsibility to develop a concept of attribute as a definitive principle, for in all activity of the person, there besides a variable portion, same as a constant purposive portion, and this later we separate it as the concept of the trait”
Cattell (1961) opinion that the traits, which is evaluated by HSPQ test, are the coil of human behavior. Cattell defined personality as “that which permits a forecast of what the person will do in a given situation”. It is reliable with the contention of Hillix and Marri (1973) that the theory of personality is truly identical with general theory of behavior for Cattell’s definition would fit theory of behavior.

Vernon (1963) views that a persons behavior in any situation depend upon specific features of that situation and on his temporary feeling or state of mind, but it depends also on his more stable characteristics, abilities, more general dispositions and habits which may be called traits.

In the light of above theoretical and practical thought, the researcher selected the Cattell’s High School personality questionnaire (HSPQ) in the present study.

The factors of the HSPQ are as follows.

**Cattel’s fourteen HSPQ personality factors**

Factor A - Reserved Vs outgoing
Factor B - Less intelligent Vs more intelligent
Factor C - Emotionally less stable Vs Emotionally Stable
Factor D - Phlegmatic Vs Excitable
Factor E - Obedient Vs Assertive
Factor F - Sober Vs Happy go lucky
Factor G - Moral Standards Vs Super ego strength
Factor H - Shy Vs Venturesome
Factor I - Tough minded Vs Tense Minded
Factor J - Vigorous Vs Doubting
Factor O - Placid Vs Apprehensive
Factor Q2 - Group dependent Vs Self Sufficient
Factor Q3 - Undisciplined Vs Controlled
Factor Q4 - Relaxed Vs Tense

Description of the HSPQ factors

A brief description of the above factors are given below

Factor ‘A’: Reserved, cool, critical, detached
Vs
Out going, easy going, participating, warm heated.

In the factor ‘A’ who scored low, He is said to be reserved, cool, rigid, cynical and alone. He is interested to work alone and avoiding class viewpoints. He is likely to be stiff and exact in his behavioral and in doing things and in many occupations these are desirable traits. He may tend, at time, to be critical, trouble making or hard. In the factor ‘A’ who Scores high tends to be good natured, ready to help, easy going, emotionally balanced, soft hearted, co-operative to people. He desires professions like dealing with people and socially impressive situation. He is kind in personal relations, less scored of criticism. He can easily forms active groups.
**Factor ‘B’**: Less Intelligence, concrete-thinking

Vs

More intelligence, Abstract thinking.

In the Factor ‘B’, who scored low is said to be slow learner, dull, lethargic. He is ignorant and has little capacity for learning higher forms of Knowledge. Due to his low intelligence or dullness, he performs poor functioning in his activities.

In the Factor ‘B’, who scores high, is called a fast learner, intelligent, and group ideas very quickly. They will think things abstractly. They have some relation with culture and alertness. High score in difference indicate worsening of mental functions in psychopathological conditions.

**Factor ‘C’**: Emotionally less stable affected by feeling

Vs

Emotionally stable calm nature.

In the Factor ‘C’, who scores low tends to be emotionally less stable. They are worrying, easily aggravated, irritative, changeable, and low in patience for unsatisfactory conditions; over anxiously fatigued, having neurotic symptoms like phobias, sleep disturbances, psychosomatic complaints. They have almost all forms of neurotic and mental disorder.

In the Factor ‘C’ who Scores high tends to be emotionally stable, matured, calm, relaxed realistic about life, having ego strength, better able to maintain high group spirits and having on integrated philosophy of life. He will escape from the unsolved and emotional problems.
Factor ‘D’ : Phlegmatic, apathetic, deliberates, inactive
Vs
Excitable, over active, demanding, impatient.

In the factor ‘D’, who scores low tends to be apathetic, inactive, and stodgy. They are thought the same as factor ‘C’ which it has some behavior in common. Any way, it is obvious by the more immediate ‘temperamental’ quality of the excitability and by an irresponsible, positive, self-confident emphasis in the emotionality.

In the factor ‘D’ who, scores high tends to be active, restless sleeper, easily distracted from work by noise or inherent difficulty is hurt and angry if not given important positions or when ever he is punished or reserved and so on. This factor has some times failed to appear with adults, but it shows as a really considerable dimension in children and mental hospital populations.

Factor ‘E’ : Obedient, submissive, mailed, conforming
Vs
Assertive, Dominant, Stubborn, Aggressive.

In the factor ‘E’ who scores low tends to be a follower, depended, follow along with the group. He is mild, soft hearted, communicative and simply distress.

In the factor ‘E’ who scores high tends to be independent in ideas, assertive, courageous to face problems. Some times he may be hard, antagonistic, though minded, authoritarian for managing others and disregards authority.
Factor ‘F’: sober, Careful, Serious, and Aloof
Vs
Happy go lucky, spontaneously, gay, enthusiastic.

In the factor ‘F’ who scores low tends to be reserved, calm, stays, aloof, thoughtful, sometimes he seems to be pessimistic, anxious and considered to be swung. He is sober and faithful person.

In the factor ‘F’ high tends to be active, honest, joyful, talkative, rapid, attentive, open, and imperturbable. He has leadership qualities. Some times he may be impetuous and mercurial.

Factor ‘G’: Moral standards, weaker super ego strength
Vs
Super ego strength, careful, preserving.

In the factor ‘G’ who scores low tends to be expedient, evades rules. His liberty from group authority may lead to disruptive acts, but at times make him more effective, while his snub to be bound by rules causes him to have less somatic distress from pressure. He is some times informal and lacking in effort for group activities and artistic demands.

In the factor ‘G’ who scores high tends to be reliable, sturdy in nature, preserving, accountable, strong-minded, vigorous, humorous, cautious, well organized. He is generally careful, serious. He likes hard working people to amusing companions. The inner categorical imperative of this vital super ego should be differentiated from the apparently similar “Social ideal self”
Factor 'H': Shy, Reserved, Diffident, Calm, Timid
Vs
Venturesome, Open, Spontaneous, Socially bold.

In the factor 'H', who scores low tends to be shy, reserved, calm, cautious, withdrawing and cooling. He is generally in inferiority complex. He is sluggish in speech and expressing himself, dislikes occupations with personal friends, prefers one or two close friends to large groups and he is not given to keeping in touch with all that is going or around him.

In the factor 'H', who scores high tends to be open socially bold, spontaneous, and plentiful in emotional response. With his hardness, he is face wear and tear in commerce with people and punishing emotional situations with out fatigue. He looks dynamic and actively interested in the opposite sex. He is cautious of detail, overlook danger signals and devour much time.

Factor 'I': Tough minded realistic, self reliant, no nonsense
Vs
Tense minded, sensitive, over protected, dependent, nervous

In the factor 'I' who scores low tends to be realistic, practical, mannish, independent, responsible, but cynical of slanted and uncivilizing. He tends to keep a group operating on a practical and realistic 'no nonsense' basic. Some times he is firm, hard, skeptical and arrogant.

In the factor 'I' who scores high seems to be tender minded, artistically fussy and negligence. Generally he is slow in-group presentation and to distress group morals by unrealistic business. Some times he is severe of attention and help, and annoyed, impractical and dependent. He dislikes rough people and bumpy occupations.
Factor 'J': Vigorous, dynamic given to action
Vs
Doubting, disruptive, unhelpful, individualistic, internally reserved.

In the Factor 'J' who scores low tends to be vigorous, dynamic vital, strong, enthusiastic. He is difficult pattern to understand. It has been called a variety of the Hamlet factor neurasthenia etc.

In the Factor 'J' who scores high tends to be doubting, unhelpful, and disruptive. He will do effects on his own. He is physically and intellectually fussy. He thinks over his fault and finds solutions. He has fewer friends. So he avoids arguments. He is unduly treated, has private views differing from the group.

Factor 'O': placed, tranquil, quiet, confident, and untroubled.
Vs
Apprehensive, anxious, nervous, troubles are worrying, depressive, guilt, and proneness.

In the factor 'O' who scores low, tends to be placid, tranquil, quiet, and untroubled. He has assurance in himself and his capacity to deal with things. He is mature, un anxious, elastic and secure.

In the factor 'O' who scores high tends to be anxious, moody, depressed, worried, gloomy, suspicious and avoiding people. He does not feel accepted in groups or free to contribute He act like anxiously child in difficulties. They are very common in clinical groups of all types.
Factor ‘Q₂’:

Group dependent

Vs

Self sufficient, resourceful, prefers own decision.

In the factor ‘Q₂’ who scores low tends to be group dependent. He likes to work and make decisions with other people. He depends upon the other people who are social approval and high regard. He is not necessarily outgoing by choice rather he needs group help. He seems to go alone with the group and may be lacking in individual resolution.

In the factor ‘Q₂’ who scores high is time being independent, accustomed to go in his way, making decisions and taking action on his own. He does not dislike people but simply does not mind their agreement or support. He discounts public opinion but is not necessarily dominant in his relation with others.

Factor ‘Q₃’:

Undisciplined, careless of protocol self conflict follows own urges

Vs

Controlled, self disciplined, compulsory, high self-concept, control, socially precise.

In factor ‘Q₃’ who scores low seems to be undisciplined, he has not bothered for social demand and will-control. He may feel maladjusted and may show maladjustment. He is not over considerate, careful or pain taking.

In the factor ‘Q₃’ who scores high tends to be strong control of his emotions and general behavior in liable to be socially aware and careful and evidence what is commonly termed, self-respect and regard for social reputation. He some times tends, however, to be stubborn effective leaders and some paranoids are high on factor ‘Q₃’.
Factor ‘Q4’ : Relaxed, Torpid, Tranquil, Calm, Peaceful
Vs
Tense, Frustrated, Driven over wrought.

In the factor ‘Q4’ who scores low tends to be sedate, relaxed, unfrustrated, peaceful stagnant. Due to his over satisfaction it can lead to laziness and low performance in the sense that low motivation produces little trial and error. Conversely high tension may be disrupting school and work performance.

In the factor ‘Q4’ who scores high tends to be tense restless, excitable and frustrated. In groups he likes a poor view of the degree or unity, orderliness and leadership. He is often fatigued, but unable to remain in active.

In the appendix A & F the copy of English and Telugu version of HSPQ is given.

4.4 Academic Achievement of the Students

Thorndike, defines the meaning of achievement as “Achieving in the school studies”. Warrens, defines achievement as “The progress made by an individual in the mastery of anything to be learned in the school”. Achievement normally means the achievement that the pupils are capable of after instruction, in the class room. Achievement involves different abilities and skills.

Robinson and Harbacks stated “Achievement is the status or level of persons learning and his ability to apply what he has learned”. according to carter, academic achievement defined as “Knowledge attained or skills developed in the school subjects, usually designed by test scores, or by marks assigned by teachers.
The term achievement is generally used to refer to academic or scholastic achievement. Academic achievement signifies accomplishment or gain or a performance carried out successfully by an individual or group on the completion of a task whether it is academic, manual, personal or social. Therefore achievement means all those behavioral changes, which take place in the individual as a result of learning experience of various kinds. Academic achievement means knowledge attained or skills developed in the school subjects, usually designed by test scores or by marks assigned by teachers or by both. Carter defines academic achievement as "Knowledge attained or skills developed in the school subjects, usually designed by test scores, or by marks assigned by teachers of both."

After consulting the researchers, subject experts in the field of teaching and the standardized procedure following in the state of Andhra Pradesh for finding the academic achievement of the students, the investigator decided to consider the performance of the students, throughout one academic year for measuring the academic achievement. Therefore the researcher considered the quarterly, half yearly and annual examination marks of the students, because these tests are prepared and standardized by the subject exports in the common examination boards.

**Scoring of Academic Achievement**

After collecting the marks of the students in the concern schools in the quarterly, half yearly and annual examinations, the researcher reduced the quarterly and half yearly examination marks into 50 and annual examination marks into 50, add to gather 100 marks in each subject viz., Telugu, Hindi, English, Mathematics, Science and Social studies. The average of languages, average of group subjects and total percentage of academic achievement also calculated for the present study.
4.5 Socio-Economic Status of the Student

Socio-Economic status of the student plays an important role in imparting good education to the children. After studying in the review of literature it is concluded that the Socio-Economic background of the student has direct impact on personality and academic achievement. Therefore the variable Socio-Economic status selected for the present study.

For finding Socio-Economic status of the students, the researcher adopted the Socio-Economic status rating scale, which is developed and standardized by the Ranga Swamy. G. (2006), Department of Education, Sri Venkateswara University, Tirupati.

4.6 Design of the Sample

According to cochran “The purpose of sampling studies is to make sampling more efficient. It provides at the lowest possible cost estimate that are precise enough for our purpose”.

The present study aims to compare the students, who are studying in residential and non-residential schools in the state of Andhra Pradesh. Hence the sample was collected from residential and non-residential schools. Therefore the sample is purposive. The schools selected for the study was stratified random. Hence the present sample is purposive stratified random sample.

Andhra Pradesh state is geographically divided into three regions.

1) Rayalaseema Region
2) Telangana Region
3) Coastal Andhra region
In each of the region, one district was selected on stratified random basis as stated below:

Rayalaseema Region - Kadapa District
Telangana Region - Mahaboob nagar District
Coastal Andhra Region - Nellore District.

The total sample is 1200 (N=1200). Therefore 400 students were selected in each region.

Fig.1 : Showing the Design of the Sample
The investigator selected 400 students in each region. Hence the total sample is 1200 students. (N=1200)

In each region, 200 students from urban and 200 students from rural localities.

In each locality, 100 students from residential schools students and 100 students from non-residential school students.

In each type of schools, 50 students from Boys and 50 students from girls selected.

In each Sex, 25 students from X class and 25 students from IX class selected for the study. Thus the total sample (N=1200) is divided according to the variables.

Fig. 2: Showing the sample according to the variables
The researcher visited personally for taking sample in the following type of schools.

**Non-Residential Schools**

- Zilla Parishad High schools
- State government High schools
- Municipal High Schools
- Aided High Schools

**Residential Schools**

- Andhra Pradesh Residential schools
- Andhra Pradesh Social welfare Residential Schools.
- Private Residential schools.
Table-1: Showing the name of the school and the sample size in the present study

<table>
<thead>
<tr>
<th>Region</th>
<th>Name of the School</th>
<th>Locality</th>
<th>Type of School</th>
<th>Sex</th>
<th>X Class</th>
<th>IX Class</th>
<th>Total Sample</th>
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4.7 Collection of the Data

The Investigator visited personally to the above mentioned 24 schools with the prior permission of the concerned head Master/Principal of the schools. In each school 25 students from X class and 25 students from IX Class selected on stratified randomly. They were properly motivated to response genuinely to all the items given to them.

In the forenoon, the researcher conduct test for X class students. In the first session RPM booklet and answer sheet was given to the students. All the instructions were given to the students and clarified all doubts. Sufficient time was given to the students for filling answers. After completion of the RPM test, Socio-Economic status format was given to the students. Again necessary instructions were given to the students for filling socio-economic status format. After filling the above format, some break is given for the students for relaxation. After the break time, the test on H.S.P.Q. was administered for the same students. Proper instructions were given before filling the H.S.P.Q. test. After completion of the test, the researcher thanked the students for their co-operation.

In the afternoon, the researcher conducted test for IX class students in the same manner mentioned above. After completion of the tests, the researcher thanked the principal/Head master and the staff for their co-operation. After completion of that academic year, the researcher again visited the above 24 schools and with the permission of the head master /
principal, collected the marks of the concern students in the quarterly, half yearly and annual / S.S.C. public examinations in the subjects Telugu, Hindi, English, Mathematics, Science and Social studies. After collection of the marks, the researcher reduced the quarterly and half yearly examination marks into 50 and annual examination marks into 50, add to gather 100 marks in each subject viz., Telugu, Hindi, English, Mathematics, Science and Social studies. The average of languages, average of group subjects and total percentage of academic achievement also calculated for the present study. These marks were taken as the indices of the level of the student’s academic achievement.

All the tools have been evaluated according the norms and standards of the concerned tools and put all the scores in the sheet for analysis purpose.

4.8. Analysis

According to the objectives and hypothesis formulated the following statistical techniques are used for the analysis of the data.

1. Measures of central tendency
2. Measures for dispersions
3. Co-efficient of correlation
4. ‘t’ test
5. ANOVA, ‘F’ ratio
6. Graphs were used for quick understanding and interpretation.

Detail interpretation was used for quick understanding.