CHAPTER V
METHODOLOGY

DESIGN

SAMPLE

THE INSTRUMENT USED

TOOLS - THE 16 P.F. TEST

THE DATA COLLECTION PROCEDURE USED

PLAN OF ANALYSIS

SUPPORTIVE DOCUMENT

HYPOTHESIS
I. DESIGN

The primary aim of the present investigation was to study the relationship between the Common Eye diseases and Personality factors. To measure this, 16 P.F. test was used.

II. SAMPLE

Data for the present investigation was collected from a total of 130 patients of common eye diseases. The incidental sample was properly diagnosed as Cataract, Glaucoma and Retinal detachment patients by the practicing doctors of the hospitals. 50 patients of Cataract, 50 patients of Glaucoma and 30 patients of Retinal detachment were included in the sample with the total of 105 male patients and 25 female patients, the age group ranging from 18 years to 83 years.

Within the framework, the sample was drawn from M & J Institute of Ophthalmology and various other private hospitals of Ahmedabad city.

On analysis of the data gathered from the subjects, the sample was classified into certain groups. These classified groups are described in the table below:
### TABLE 5.1

<table>
<thead>
<tr>
<th>Groups</th>
<th>18-30 yrs</th>
<th>31-50 yrs</th>
<th>51 onwards</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cataract</td>
<td>2</td>
<td>9</td>
<td>39</td>
<td>50</td>
</tr>
<tr>
<td>Glaucoma</td>
<td>10</td>
<td>11</td>
<td>29</td>
<td>50</td>
</tr>
<tr>
<td>R.D.</td>
<td>3</td>
<td>8</td>
<td>19</td>
<td>30</td>
</tr>
<tr>
<td>CED Total</td>
<td>15</td>
<td>28</td>
<td>87</td>
<td>130</td>
</tr>
</tbody>
</table>

Through this study the sex group is excluded because of unavailability of literate female patients, the fair comparison was not possible.

### III. THE INSTRUMENT USED

The 16 P.F. test was used for the present investigation. 16 P.F. is a personality inventory which is not a self report personality inventory. This inventory consists of statements and questions which are in the indirect form and are about the person's feelings and personal characteristics. In this questionnaire, as the statements and questions are in indirect form, the individual cannot assess himself.

Cattell had applied a different factorial method to the construction of personality inventories (1946; 1957). In the effort to arrive at a comprehensive description of personality
Cattell began by assembling all personality traits names occurring in the dictionary (support of Odbert 1936) and in the psychiatric and psychological literature. This list was first reduced to 171 trait names by combining obvious synonyms. The 171 trait list was then employed in obtaining associate ratings of a heterogeneous group of 100 adults. Intercorrelation and factor analysis of these ratings were followed by further ratings of 208 men on a shortened list. Factorial analysis of the latter ratings lead to the identification of what Cattell described as "the primary source traits of personality".

Factor identification through the correlation of ratings may reflect in part the influence of social stereotypes and constant errors of judgments, rather than the subject traits organization. Cattell maintains that his identification of primary personality traits is corroborated by the findings of other studies by himself and other investigators, using not only ratings, but also much techniques as questionnaire and objective tests. Some of the alleged similarities in trait descriptions, however appeared forced and not too convincing (Becker 1960). The scale was not reliable despite the extensive research conducted by Cattell and his associates over more than twenty years, the traits proposed by Cattell were regarded as tentative.

On the basis of factorial research, Cattell and his associates have constructed a number of personality inventories, of which the most comprehensive is the Sixteen Personality Factor Questionnaire (16 P.F.).
For the present investigation, the investigator chose to use the 16 P.F. test. To study the deep-rooted conflicts and stressers, Projective tests are considered the best clinical instrument. But the eye disease patients have marginal visual handicap and the projective tests have visual testing material, therefore these tests are not suitable. It was, thus decided to study the personality of such patients by using the personality inventory. 16 P.F. is a comprehensive test and in this test, as many as 16 factors of personality can be assessed and it consists of 167 items.

16 P.F. is also very useful tool for assessing the personality of normal population. Unlike the MMPI which is a diagnostic tool and is used for psychiatric diagnosis. Also MMPI scores may be more a reflection of the patients response set than a source of clinically useful information.

The sample for the present study does not consist of psychiatric patients, but they are assumed to be the normal population with some personality predisposition for this kind of somatic expression. 16 P.F. test, prepared by Cattell, is found to be the most suitable tool for the objective of the present study.

It is for these prevalent and important conditions, that the present test (16 P.F.) is intended. And it can be used as a group or individual test for older or younger population but the most unskilled and least educational groups in the population.
Gujarati version for adult population (Raval 1990) of Cattel R.B's 16 P.F. inventory was used to study the personality traits in the patients of Cataract, Glaucoma and Retinal detachment.

The 16 P.F. test consists of 187 statements, of the Yes; in-between; No type responses.

IV. THE 16 P.F. TEST

(i) Utility of the test:

Cattell R.B. (1979) has presented personality inventory by applying the factors analysis for identification of personality factors.

The 16 P.F. questionnaire is an objectively scoreable test devised by basic research in psychology to give the most complete coverage of personality possible in a brief time. It is not merely concerned with some narrow concepts of "Neuroticism" or "Adjustment" or some special kind of ability but sets out to cover planfully and precisely all the main dimensions along which people can differ, according to basic factor analytic research.

Planned for the age seventeen through the mature adult age range, its reading level varies for different forms, there are six possible forms (A, B, C, D, E and F). Form A and B are two out of six possible forms which are most appropriate for the fully literate person, the person whose educational level is equivalent to that of the normal high school graduate.

Coverage of personality is insured by the sixteen
functionally independent and psychologically meaningful dimensions, isolated by over twenty years of factor analytic research on normal and clinical groups. The important aspects of personality are neglected by most questionnaires, using a smaller number. Moreover, a scoring system is provided whereby, from the sixteen factors one can extract and work with only four broader traits: "Anxiety; Extraversion; alert poise and independence".

Experience with the 16 P.F. in clinical educational and industrial psychology shows that the use of 16 P.F. traits gives actual prediction, superior to those from single scale measures or from arbitrary scales not based upon true functional unities. The scales here are psychologically meaningful because basic statistical and clinical research on personality structure has preceded the construction of the 16 P.F. and its related scales at the younger age levels (high school personality questionnaire; children's personality questionnaire; early school personality questionnaire).

(ii) **What the test measures:**

The 16 P.F. questionnaire is unique in:

(a) Having item possessed of a demonstrated saturation with respect to each of the factors which it sets out to measure.

(b) Having proof that each of the questionnaire factors corresponds to a primary personality factor found elsewhere i.e., beyond the questionnaire realm; notably in ratings in real life situations in the objective analytic factor
battery in social response patterns and in abnormal pathological behavior.

The personality measured are not just peculiar to the 16 P.F. test, they have been established as unitary, psychologically meaningful entities, in many researches in various life situations. They enter into general psychological theory and into tests used at other ages and in other cultures.

These sixteen dimensions or scales are essentially independent i.e. to say the correlation between one and another is usually quite small. Therefore, having a certain position one does not prevent the person's having any position whatsoever on any other. Thus each of the sixteen scales, being an entirely new piece of information about the person, a condition not found in many alleged multidimensional scales. The most important point is that their psychological reality enables more knowledgeable prediction to be made from them, than from merely statistical scales. For e.g. it is known that "ENTHUSIASM" (factor F. surgency) declines fairly rapidly between twenty and thirty years of age, that shyness (Factor H) and cool aloofness (Factor A) are thought to be largely hereditarily determined whereas "cultured" sensitivity (Factor 1+) and tenseness (Q4+) are largely environmental and may be expected to alter according to situation or education. Such knowledge or predictions now obtainable from the factors on various clinical, social, industrial and educational criteria places the use of factored personality measures on a totally different scientific level from that which

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has existed for single scale or arbitrary composite questionnaires not demonstrated to correspond to truly independent traits or to psychological realities. Moreover, the 16 P.F. tests comprehensiveness of personality coverage means that once the scores are obtained they become applicable over and over again, in different weightings, to predict any number of diverse criteria, without constructing and giving a separate new test for predicting each new criterions.

In addition to the sixteen primary factors, the test can be used as a measure of four or sometimes more, secondary dimensions which are broader traits, but these can be scored in the same way as the primary factors. In case of these broader 'secondary' traits, as in the case of the sixteen 'primary factors', the proof of their functional unity and the availability of psychological knowledge regarding their nature make possible a much more sophisticated and effective use. One can proceed to more kinds of individual analysis and prediction than are possible with empirical scales which are merely item-homogeneous, but otherwise arbitrary composites.

The Psychological Meaning of 16 Traits of Personality

<table>
<thead>
<tr>
<th>Factor</th>
<th>Psychological Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>'A' Cyclothymia (Warm/sociable)</td>
<td>A+ Vs Schizothymia A- (Aloof, stiff)</td>
</tr>
<tr>
<td>'B' General Intelligence (bright)</td>
<td>B+ Vs Mental defect B- (dull)</td>
</tr>
<tr>
<td>'C' Emotional stability or ego strength (Mature/caim)</td>
<td>C+ Vs Dissatisfied C- Emotionality (Emotionally immature, unstable)</td>
</tr>
</tbody>
</table>

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'E' Dominance or Ascendence (Aggressive, competitive) E+ Vs Submission E- (mild)

'F' Surgency (Enthusiastic, Happy-go-lucky) F+ Vs Desurgency F- (Glum, Sober, serious)

'G' Character of super, ego-strength (conscientious, persistent) G+ Vs Lack of rigid internal standards (casual, undependable)

'H' Parmia (adventurous, thick skinned) H+ Vs Trectia H- (shy, timid)

'I' Premia (sensitive, effeminate) I+ Vs Harria I- (tough, realistic)

'L' Protension Paranoid tendency (suspecting/jealous) L+ Vs Relaxed, secure L- (Accepting/addaptable)

'M' Autia (Bohemian, introverted, absent-minded) M+ Vs Praxernia M- (Practical, concern with facts)

'N' Shrewdness (Sophisticated, polished) N+ Vs Naivete N- (Simple, Unpretentious)

'O' Guilt proneness (Timid, insecure) O+ Vs Confident, unshakable O- (self-secure)

'Q1' Radicalism Q1+ Vs Conservative of temperament (Uncontrolled)

'Q2' Self-sufficiency (resourceful) Q2+ Vs Group dependency Q2- (social group dependent)

'Q3' High self-sentiment Q3+ Vs Poor self-sentiment formation (Uncontrolled)

'Q4' High ergic, tensions Q4+ Vs Low ergic tension Q4- (Pause, Excitable) (Phlegmatic composed)
(iii) Validity and Reliability of the test used:

The majority of questions in the 16 P.F. are indirect, asking about interests which the subject would not necessarily perceive to be related to the trait in question, so that it escapes, some of the distortions described. Moreover in the 16 P.F. the factors are not interpreted, from the nature of the subject's statement about himself, but from the known correlations between these mental interiors as found in questionnaire factors, and the factors established in behavior in other words, the question responses are treated as behavior and not as valid self ratings.

Normally the subjects make their responses on an answer sheet, either taken from back of the booklet or a separate sheet. In cases with the disturbed subjects, and when the answer cards suggested for clinical work, have not been made out, it may be better to let the person underline his answers, on the booklet, and then have a clerk transfer them to the answer sheet for convenience of scoring. The answer sheet can be hand scored or machine scored. Validity includes the concepts of construct validity, i.e. the extend to which the test measures the traits it is supposed to measure, and specific clinical and industrial criterion validity for e.g. its correlation with a particular job success. The 16P.F. by the universality of its factors, has such specific criterion validity potentially against many thousands of specific criteria, so it is pointless to call any one such correlation its validity.

The concept validities of the 16 factor scales can be
calculated in two ways:

1. From the known factor loadings of the items on the factors, in the original researches this gives a mean validity for the A and B forms of the test as follows:

- A = 0.88  F = 0.91  L = 0.89  Q1 = 0.74
- B = 0.80  G = 0.85  M = 0.74  Q2 = 0.81
- C = 0.76  H = 0.86  N = 0.73  Q3 = 0.92
- E = 0.82  I = 0.84  O = 0.91  Q4 = 0.96

2. From the split half reliability of the factor, assuming that the items have no specific in common but only the common factor, when validity reliability. This yields validities of:

- A = 0.95  F = 0.92  L = 0.88  Q1 = 0.84
- B = 0.93  G = 0.92  M = 0.94  Q2 = 0.89
- C = 0.96  H = 0.91  N = 0.89  Q3 = 0.87
- E = 0.95  I = 0.87  O = 0.92  Q4 = 0.94

Reliability: Test research has been directed to getting the highest possible reliability for a small number of items. However, it is possible to gain high figures for reliability, by making a test too homogeneous by choosing item sharing the same specifics as well as the required common factor and by doing away with spread in difficulty. Since it is desirable that the 16 P.F. have a good range, and discriminate amongst clinical cases, as
well as industry and college, they have not aimed at the artificially high reliabilities to which some handbooks accustom their readers.

The reliability coefficient takes three major forms, consistency, equivalence, and stability coefficients. No data is given on the last, because stability varies too much with undefinable conditions and is a characteristic of trait, rather than the test. For e.g. schizothymia (A factor) and intelligence (B factor) vary little from day to day, but ego strength (C factor) and still more, surgency (F factor) fluctuate in level a good deal. This therefore belongs to psychology of personality.

Reliability (consistency: split half) coefficients for factor measurements on Battery length: Form A and Form B

\[
\begin{align*}
A &= 0.90 & F &= 0.84 & L &= 0.77 & Q1 &= 0.71 \\
B &= 0.86 & G &= 0.85 & M &= 0.88 & Q2 &= 0.79 \\
C &= 0.93 & H &= 0.83 & N &= 0.79 & Q3 &= 0.76 \\
E &= 0.91 & I &= 0.76 & O &= 0.85 & Q4 &= 0.88
\end{align*}
\]

V. THE DATA COLLECTION PROCEDURE USED

All the subjects were contacted personally and requested to volunteer for the testing schedule. Rapport was established with each subject and they were assured that the results and any information they would give, would be kept strictly confidential. They were requested to cooperate and answer truthfully, as the purpose and significance of the investigation were explained to
them by the researcher and the doctors.

The testing schedule was started by asking the subjects to fill in the 16 P.F. answer sheets. Each subject took about 45 minutes to 60 minutes to complete the form.

Instructions given:

Before the patients were made to answer the statements, they were given certain instructions. It was specified that they had to fill in their answers using the following response format: "yes", "in-between" or "no". They could use either the same sheet or the answer sheet. It was confirmed if any questions were to be asked by the patients. Certain points were re-emphasized in the instruction, for e.g. the patients were asked to answer as correctly as possible and truthfully for it was in their own interest. They were asked to make sure that no question was left out.

It helped most subjects to know the rate at which they should be working. The test was presented in one session, and the time limit was 1 hour. They were reminded to give the first answer that occurred to them. Thus all the responses of 187 statements of the 16 P.F. test was collected.

VI PLAN OF ANALYSIS

It is planned to take the sample size of 130 patients in all the three Eye Diseases Groups. Since the incident rate is relatively higher in Cataract, Glaucoma than in Retinal Detachment, it is planned to take 50 patients in Cataract, 50
patients in Glaucoma and 30 patients in Retinal detachment. It is also planned to take an incidental sample consisting of an equal number of cases falling into the male/female category.

1. In order to evaluate the age as a contributing factor in the eye disease condition the $\chi^2$ analysis is planned to be carried out in terms of frequency distribution of position of each case on the profile.

2. Cluster analysis will also be carried out to estimate a particular sequence or one or more clusters of Personality Factors, related to each eye disease condition.

3. A group profile for each comparable group will be prepared on the basis of mean standard scores of each factor, like the disease group, various age groups, sex groups etc.

4. It is planned to compare these profiles with the other reference data available in the field of clinical psychology.

VII. Supportive documents are provided in the form of Case Histories, in order to evaluate the relative role of psychological factors in the formation of eye disease condition.
HYPOTHESIS

1. Age has no influence on the Three Eye disease groups.

2. The incidence of three eye diseases are not significant in the younger age group of 18-30 years.

3. The incidence of three eye diseases are not significant in the middle age group of 31-50 years.

4. The incidence of three eye diseases are not significant in the older age group of 51 years and above.

5. Age is not an influencing factor in the formation of Cataract condition.

6. Age is not an influencing factor in the formation of Glaucoma condition.

7. Age is not an influencing factor in the formation of Retinal detachment condition.

8. Cataract patients do not show any tendencies on personality factor A i.e. Cyclothymia Vs. Schizothymia.

9. Cataract patients do not show any tendencies on personality factor B i.e. Bright and intelligent Vs. dull, low capacity.

10. Cataract patients do not show any tendency on Personality Factor C i.e. High super ego strength Vs. Low super ego strength.

11. Cataract patients do not show any tendency on Personality Factor E i.e. Dominance Vs. submissiveness.

12. Cataract patients do not show any tendency on Personality Factor F i.e. surgency Vs. desurgency.

13. Cataract patients do not show any tendency on Personality Factor G i.e. High super ego strength Vs. Low super ego
strength.

14. Cataract patients do not show any tendency on Personality Factor H i.e. Parmia Vs. Threctia.

15. Cataract patients do not show any tendency on Personality Factor I i.e. Premsia Vs. Harria.

16. Cataract patients do not show any tendency on Personality Factor L i.e. Protension Vs. Inner Relaxation.

17. Cataract patients do not show any tendency on Personality Factor M i.e. Autia Vs. Praxernia.

18. Cataract patients do not show any tendency on Personality Factor N i.e. Sophisticated Vs. Naivete.

19. Cataract patients do not show any tendency on Personality Factor O i.e. Timidity Vs. Confidence.

20. Cataract patients do not show any tendency on Personality Factor Q1 i.e. Radicalism Vs. Conservatism.

21. Cataract patients do not show any tendency on Personality Factor Q2 i.e. Self sufficiency Vs. Group dependency.

22. Cataract patients do not show any tendency on Personality Factor Q3 i.e. High Self Sentiment Formation Vs. Low self Sentiment Formation.

23. Cataract patients do not show any tendency on Personality Factor Q4 i.e. High Ergic Tension Vs. Low Ergic Tension.

24. Glaucoma patients do not show any tendency on Personality Factor A i.e. Cyclothymia Vs. Schizothymia.

25. Glaucoma patients do not show any tendencies on personality factor B i.e. Bright and intelligent Vs. dull, low capacity.

26. Glaucoma patients do not show any tendency on Personality
Factor C i.e. High super ego strength Vs. Low super ego strength.

27. Glaucoma patients do not show any tendency on Personality Factor E i.e. Dominance Vs. submissiveness.

28. Glaucoma patients do not show any tendency on Personality Factor F i.e. surgency Vs. desurgency.

29. Glaucoma patients do not show any tendency on Personality Factor G i.e. High super ego strength Vs. Low super ego strength.

30. Glaucoma patients do not show any tendency on Personality Factor H i.e. Parmis Vs. Threctia.

31. Glaucoma patients do not show any tendency on Personality Factor I i.e. Premsia Vs. Harria.

32. Glaucoma patients do not show any tendency on Personality Factor L i.e. Protension Vs. Inner Relaxation.

33. Glaucoma patients do not show any tendency on Personality Factor M i.e. Autia Vs. Praxernia.

34. Glaucoma patients do not show any tendency on Personality Factor N i.e. Sophisticated Vs. Naivete.

35. Glaucoma patients do not show any tendency on Personality Factor O i.e. Timidity Vs. Confidence.

36. Glaucoma patients do not show any tendency on Personality Factor Q1 i.e. Radicalism Vs. Conservatism.

37. Glaucoma patients do not show any tendency on Personality Factor Q2 i.e. Self sufficiency Vs. Group dependency.

38. Glaucoma patients do not show any tendency on Personality Factor Q3 i.e. High Self Sentiment Formation Vs. Low self
Sentiment Formation.

39. Glaucoma patients do not show any tendency on Personality Factor Q4 i.e. High Ergic Tension Vs. Low Ergic Tension.

40. Retinal detachment patients do not show any tendencies on personality factor A i.e. Cyclothymia Vs. Schizothymia.

41. Retinal detachment patients do not show any tendencies on personality factor B i.e. Bright and intelligent Vs. dull, low capacity.

42. Retinal detachment patients do not show any tendency on Personality Factor C i.e. High super ego strength Vs. Low super ego strength.

43. Retinal detachment patients do not show any tendency on Personality Factor E i.e. Dominance Vs. submissiveness.

44. Retinal detachment patients do not show any tendency on Personality Factor F i.e. surgency Vs. desurgency.

45. Retinal detachment patients do not show any tendency on Personality Factor G i.e. High super ego strength Vs. Low super ego strength.

46. Retinal detachment patients do not show any tendency on Personality Factor H i.e. Parmia Vs. Threctia.

47. Retinal detachment patients do not show any tendency on Personality Factor I i.e. Premsia Vs. Harria.

48. Retinal detachment patients do not show any tendency on Personality Factor L i.e. Protension Vs. Inner Relaxation.

49. Retinal detachment patients do not show any tendency on Personality Factor M i.e. Autia Vs. Praxernia.

50. Retinal detachment patients do not show any tendency on
Personality Factor N i.e. Sophisticated Vs. Maivete.

51. Retinal detachment patients do not show any tendency on Personality Factor Q i.e. Timidity Vs. Confidence.

52. Retinal detachment patients do not show any tendency on Personality Factor Q1 i.e. Radicalism Vs. Conservatism.

53. Retinal detachment patients do not show any tendency on Personality Factor Q2 i.e. Self sufficiency Vs. Group dependency.

54. Retinal detachment patients do not show any tendency on Personality Factor Q3 i.e. High Self Sentiment Formation Vs. Low self Sentiment Formation.

55. Retinal detachment patients do not show any tendency on Personality Factor Q4 i.e. High Ergic Tension Vs. Low Ergic Tension.