CHAPTER III
(Research Methodology)
The methodological design of the present study have now been set out in this chapter under the following sections-

(i) Population
(ii) Sample
(iii) Research design
(iv) Tools of the study
(v) The collection of data
(vi) The statistical Analysis

(i) Population - The population of present study constituted criminals and normal person (Non-Criminals) of Uttar Pradesh criminal belt of Bundelkhand region. There are six districts of Uttar Pradesh Bundelkhand region as Jalaun, Hamirpur, Banda, Jhansi, Lalitpur and Mahoba. The criminal belt can be divided into two parts as uneducated belt and educated belt given below-
Criminal belt

Uneducated belt

(mostly backward castes+schedule castes)

Jalaun
(a) Rampura block
Husepura, proper, Rampura
Jagammanpur, Pachnada region,
Karan Khera
(b) Kuthaund Block
Randheerpur, Jugrajpur, Pathrahi,
Kuthaund
(c) Mahewa Block
Gurha (Phoolan Devi) Purwa,
Sirs, Mahewa Nyamatpur, Simara
Khargoi, Sikanna
(d) Kadaura
Gulauli, Dhamna, Basrehi,
Chandarsi, Parason

Banda
Karvi, Manikpur forest, Baberu,
Jaspura, Nareini Pailani, belt of

Kein river

Educated

(1) Hamirpur
(a) Gohand
(b) Rath
(c) Kharela
(d) Kurara
(2) Mahoba
(a) Kabrai
(b) Soopa
(c) Galiah
(3) Jhansi
(a) Moth
(4) Lalitpur
(a) Marawara
(ii) Sample - The present study consisted a sample of 200, hundred criminals and hundred normal persons. All the 200 persons were taken from criminal belt of Bundelkhand region of Uttar Pradesh. The age group was kept constant between 20 to 40 years.

The above sample of the present study was selected by purposive sampling technique.

(III) Research Design

The present study is a scientific survey type research with a sample of 100 criminals and 100 normal persons within age group of 20 to 40 years.

The variables of the present study are as follows -

**Independent Variable** :-

"An independent variable is the factor manipulated by experimenter in his attempt to ascertain its relationship to an observed phenomenon. (Townsend).

The antecedent conditions that the experimenter manipulates freely are called the independent variables. The variables over which the investigator has control are called independent variable.

In the present study the independent variables are type of person (criminal and normal), I.Q., Neuroticism, climate, class, area and
multipersonality factors as social desirability, extraversion, psychoticism, dogmatism, alienation, emotional instability, self-confidence, empathy and dominance.

**Dependent Variable**

The phenomenon which are wish to explain and predict are the dependent variables. These variables are called dependent variables because they depend upon the occurrence of particular antecedent conditions. In experimental enquiry we manipulate the antecedent conditions in order to discover the ways in which they determine the dependent variables.

A dependent variable is that factor which appears, disappears or varies as the experimenter introduces, removes or varies the independent variables (Townsend). In the present research problem the dependent variable is socio-cultural environment as the attitude towards Authority, Social, Family and towards their teachers.

( IV ) Tools of the study

After the formulation of hypothesis and selection of the sample the next important step was to select suitable tools for the collection of data. The selection of the tools for any study depends upon various factors particularly depending on the objectives of the study. The following tools used for the data collection in the present study.

(a) Neuroticism Scale Questionnaire (N.S.Q.)

By-Ivan H. Scheier

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R. B. Cattell

(b) Multi-variable Personality Inventory (M. P. I.)

By - Dr. Taresh Bhatia

Arunima Pathak

(c) Socio-Cultural Environment Attitude Scale

By - Dr. Taresh Bhatiya

Dr. K.B. L. Srivastava

(d) The revised Bhatia's short battery of performance tests of intelligence for adults

By - Dr. S.K. Verma & others.

(a) Neuroticism Scale Questionnaire

"The NSQ"

By - Ivan H. Scheier

R. B. Cattell

1. PURPOSE AND VALUE OF THE NSQ

The NEUROTICISM SCALE QUESTIONNAIRE (NSQ) is a brief, standard, easily administered and scored inventory measuring degree of neuroticism or "neurotic trend." It is suitable for normal and abnormal adults and adolescents.

To Freud's classical dictum: "Anxiety is the central problem in
neurosis, "most modern observers would add: "Neurosis is the central problem in society." Epidemiological studies place the incidence and prevalence of neurosis in our society at anywhere from five to thirty-five percent of the population. Generally, such studies define neurosis as "being in an institution with a diagnosis of 'neurosis', or otherwise in definite need of treatment for neurosis." But the problem is even more severe when we realize that neurosis cannot be regarded as confined within the institution's walls or to the therapist's couch. Some degrees of neurosis exist through the entire population, affecting real-life adjustment and effectiveness. Therefore, the problem of neurosis is not the exclusive province of the clinician, but has to be considered by any practitioner concerned with selection and success in school, occupation, marriage, group relations, etc. It may be dramatically relevant for only five percent of the population, but it has some real relevance to degree of adjustment for the other ninety-five percent as well.

Measurement is now recognized as a precondition for dealing with neurosis socially or individually. It is commonly necessary to evaluate the extent of neurotic problems in a person or group of persons before effective action can be taken. The IPAT NEUROTICISM SCALE QUESTIONNAIRE (NSQ) is designed to implement this fundamental measurement precondition. In so doing, it has the following advantages:

(1) It is brief (40 items, 5 to 10 minutes), easy to administer in
individual or mass group form, and easy to score by a standard key-scoring system. It helps diagnosis by giving a quantitative evaluation of neurotic trend without requiring the time of skilled practitioners, leaving them free to concentrate on guidance, therapy, etc.

(2) NSQ scores discriminate not only between neurotics and normals, but also between varying degrees of slighter neurotic trend in persons usually classed as normal. Thus, the NSQ can be usefully applied to the vast numbers of essentially normals for whom assessment of neurotic trend is nevertheless important in occupational acceptability and in understanding and improving adjustment and proficiency.

(3) The NSQ is rooted firmly, by validation research, in the common core of clinical judgement regarding the symptoms and nature of neurosis. As shown in the research literature the numerical value obtained from the NSQ corresponds to what is common to the judgements of psychiatrists and clinical psychologists in regard to neurotic trend. This minimizes confusion due to the well known variation of diagnoses and ratings with subjective preconceptions and perceptual inaccuracies, from practitioner to practitioner. However, it would be unsatisfactory to gain this 100 percent inter-observer "conspexit" reliability of diagnosis by merely defining a scale arbitrarily. The objectively-scored, perfect inter-observer reliability must be on not just any test, but on a rest which has a firm meaningful relation to neurosis. Accordingly, the following sections give a brief ac-
count of the research which developed the NSQ's meaningfulness (validity) as a neuroticism measure.

2. WHAT THE TEST MEASURES

The NEUROTICISM SCALE QUESTIONNAIRE (NSQ) is an integral part of the IPAT plan for providing basis measures for each factored personality dimension. This approach rests on a vast array of research defining the functionally unitary personality dimensions (factors) in the normal as well as abnormal personality. Clinical studies with the major personality dimensions show that neurotics do not differ from normals on one dimension only, as some have supposed, but on many personality dimensions at once. Neurotic trend is thus a complex form of deviation involving both innate and environmentally determined inadequacies. However, recent studies show that some six personality dimensions account for the most marked differences between clinically-judged neurotics and normals.

The NSQ test is designed to give a properly weighted total on these six dimensions. Unlike the 16 PF TEST, it does not set out to measure the entire personality, but deals only with that portion of it most intimately bound up with and expressing neurotic trend. These six neurosis-associated dimensions are listed below; first, underlined and with IPAT's usual letter designation at their high-score neurotic-associated pole, followed, in parentheses, by their low-score, opposite-to-neurotic poles.
The Neurotic-Associated Personality Factors Measured by the NEUROTICISM SCALE QUESTIONNAIRE (NSQ)

(1) Factor I Overprotection; Tender-Minded, Cultured, Protected Emotional Sensitivity (vs. Tough-Mindedness)

(2) Factor F Depressiveness; Inhibited, Sober, Seriousness
   (vs. Happy-go-lucky Cheerfulness)

(3) Factor E Submissiveness, Suggestibility, Dependence
   (vs. Dominance)

(4) Factor O Worry, Guilt Proneness
   (vs. Assured Self-Confidence)

Anxiety

(5) Factor Q4 Ergic Tension (from Frustration)
   (vs. Calm Relaxation)

(6) Factor C Ego Weakness or Emotional Immaturity and Instability
   (vs. Ego Strength)

The last three dimensions listed above, as indicated, are known to group together in a second-order factor of anxiety and the test provides only one separate subscore for these three dimensions - an anxiety score - which becomes the fourth component of the test. Psychiatric and clinical correlations show that this anxiety factor-measure conforms to the consensus of clinical judgement as to the nature and level of free anxiety, Research
also shows that about half the differences between neurotics and normals can be accounted for as differences in anxiety level. Thus, anxiety does have a major role in neuroticism, as Freud said, but it is by no means the whole of it. Neuroticism and anxiety are distinct phenomena. Neurotics do not always and necessarily show high anxiety, and normals can be highly anxious.

Consequently, neuroticism and anxiety can be separately measured, and accordingly, IPAT publishes a scale solely for anxiety—the IPAT ANXIETY SCALE.

The present neuroticism scale includes this anxiety factor as only one of several ingredients for a particular diagnostic purpose. Since anxiety can be measured separately in the IPAT ANXIETY SCALE the anxiety contribution in the NSQ is weighted at only approximately a fourth of the total neuroticism score. The upshot of these weighting arrangements is that the Pearson product moment correlation between the NSQ and the IPAT ANXIETY SCALE is very moderate, indicated as .36 on a sample of 83 normals (53 males, 30 females). For practical purposes, this means that the NSQ provides a good deal of information independent of the IPAT ANXIETY SCALE; that is, the information in one test is not merely duplicated by the information in the other. Thus, the IPAT ANXIETY SCLAE will provide valid and reliable measurement of anxiety only, defined as manifest, free-floating anxiety, while the NSQ includes substantial emphasis also
on those "bound anxiety," maladjustment, and exhaustion aspects of neuroticism which are deliberately missed in the IPAT ANXIETY SCALE. Even so, the free anxiety component can still be assessed separately in the NSQ, if desired, and given its appropriately heavier weight in the total neuroticism score.

The NSQ, running certain personality factors into a single anxiety score, thus finishes by analyzing neurosis into four components. Table 1 shows that these four components are distinct and statistically virtually independent of one another, each providing information on psychologically meaningful aspects distinct from the other three. Thus, that a person is near the neurotic-associated pole on one component does not materially raise the probability that he will be high on any of the others. The full-blown severe neurotic is simply the statistically relatively rare person who happens to be high on all components at once. The fifth and final score on the NSQ picks up this overall neurotic trend, because score is the equally-weighted sum of scores on the four separate components.
TABLE 1
PEARSON PRODUCT-MOMENT CORRELATIONS AMONG THE FOUR COMPONENTS IN THE NEUROTICISM SCALE

<table>
<thead>
<tr>
<th></th>
<th>I</th>
<th>F</th>
<th>E</th>
<th>Anxiety</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protected Emotional Sensitivity</td>
<td>X</td>
<td>.28</td>
<td>.08</td>
<td>.12</td>
</tr>
<tr>
<td>Depression</td>
<td></td>
<td>.28</td>
<td>X</td>
<td>.11</td>
</tr>
<tr>
<td>Submissiveness</td>
<td></td>
<td>.08</td>
<td>.11</td>
<td>X</td>
</tr>
<tr>
<td>Anxiety</td>
<td></td>
<td>.12</td>
<td>.15</td>
<td>.13</td>
</tr>
</tbody>
</table>

Separate subscores are provided because they permit a diagnostic and etiological analysis enabling the clinician to deal more insightfully with a given case. Some of these components (subscores) contribute more prominently to one type of neurosis, while others contribute to other types of neurosis (see Section 8). Thus, the person's profile on the four components not only indicates his "total" neuroticism level, but also helps identify the particular sub-category of neurosis or related clinical category which he comes closest to fitting.

Nevertheless, although a summation of four really different things, the total NSQ test score has greater stability and clinical criterion meaning, and will there fore usually be the main basis for decisions on therapy, job selection, etc. Research has shown that this total score is higher when there is a higher probability that the consensus of clinicians would
place the person in a "neurotic" rather than a "normal" or some other non-neurotic category (see Sections 3, 4, and 8), and this is the primary purpose of the rest.

3. TEST DESIGN AND CONSTRUCTION

Two basic Principles guided test construction:

(1) Neuroticism is defined empirically—as those personality characteristics which actually differ significantly between clinically-judged neurotics and normals.

(2) Prior to arbitration by experiment, any personality characteristic is potentially capable of such discrimination; therefore, the first step was comprehensive and complete measurement of the personalities of neurotics and normals. Every known questionnaire personality dimension was given an opportunity to show whether or not it took significantly different scores for neurotics vs. normals. The test instrument used to provide this comprehensive personality coverage was the 16 PERSONALITY FACTOR or 16 PF TEST(9), which measures sixteen distinct dimensions of personality. Using only 100 to 500 items (according to the number of forms used), this test has been demonstrated to provide the essential information previously available in four to five thousand items representing an exhaustive list of all questionings employed by psychologists relating to personality.

In selecting those which were neuroticism-associated from
among the 16 personality-totality dimensions, the scores for 213 clinically-judged neurotics were compared with scores for normals on each of the sixteen dimensions measured by the 16 PF TEST. The dimensions (of factors) chosen to represent neurosis in the NSQ were those six, listed in Section 2, which most significantly discriminated between the neurotics and normals.

Obviously, if the neurotic criterion group is inappropriately chosen, the measurements of neuroticism based on it will be likewise inappropriate. In order to guarantee the widest possible generalizability of the resultant measurements, the neurotic criterion group was carefully selected in accordance with the principles.

The 16 PF TEST picks a maximum of about 30 items which best measure each of sixteen personality dimensions comprehensively covering personality. With the selection of six (out of 16) dimensions as most associated with neurosis vs. normalcy, the total pool of possible neuroticism-measuring items, originally some four to five thousand, thus becomes now a maximum of 180 items (30 for each of the six neurosis-associated dimensions). To this basic pool of 180 items were added 20 items, selected from among a pool of over 100 items analyzed in recent research, because

(a) they discriminated very significantly between clinically-judged neurotics and normals, and

(b) appeared to be at least somewhat different from any of
the four or five thousand items in the total pool from which our research began. From this penultimate pool of 200 items, 40 were finally selected for the NSQ, because they met the following requirements:

(1) maximum differentiation between neurotics and normals, that is, significantly different proportions of response in the item categories, for neurotics as contrasted with normals;

(2) maximum discrimination of degrees of neurotic trend within the normal range.

(3) the ability to measure selectively (correlate with) one and only one of the four components intended in the test.

Among the items which best met the above three most important criteria, strict attention was also given to:

(4) small vocabulary demand and high intelligibility, as rated by several experts and examined in view of comments from users through many years of application (The NSQ is readily intelligible to reading and educational levels down to sixth or seventh grade.);

(5) disguise of test purpose* in order to minimize

(a) deliberate falsification and/or

(b) the possibility of the test itself becoming a stress situation for the examinee.

Application of the five criteria described above reduced the original pool of over four thousand items to 200, and finally to 40. The final
40 item form is therefore a very fine distillate, each item of which represents a one-in-a-hundred survivor out of original item candidates. The final 40 items are distributed among the four personality components and scored as shown in Table 2.

**TABLE 2**

**DISTRIBUTION OF ITEMS IN THE FOUR COMPONENTS OF THE NEUROTICISM SCALE QUESTIONNAIRE (NSQ)**

<table>
<thead>
<tr>
<th>NSQ</th>
<th>Question number in Test Booklet</th>
<th>Number of Items</th>
<th>Raw Score</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor-Component</td>
<td>1-5, 21-25</td>
<td>10</td>
<td>0-20</td>
<td></td>
</tr>
<tr>
<td>Overprotected, Tender-Minded Sensitivity (I+)</td>
<td>6-10, 26-30</td>
<td>10</td>
<td>0-20</td>
<td></td>
</tr>
<tr>
<td>Depressive Overseriousness (F-)</td>
<td>11-15, 31-35</td>
<td>10</td>
<td>0-20</td>
<td></td>
</tr>
<tr>
<td>Submissiveness, Dependence (B-)</td>
<td>16-20, 36-40</td>
<td>10</td>
<td>0-20</td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL COMPOSITE SCORE**

| 40 | 0-80 |

Each item has three response alternatives, scored 0,1,2, from lower to higher level of neuroticism and any single item contributes to only one of the four components. The total composite neuroticism score is sim-
ply the sum of raw scores on all 40 items in the four components. This amounts to an approximately equal weighting of each component in its contribution to total neuroticism. ** This weighting is essentially proportional to the relative sharpness with which these components discriminate between neurotics and normals, except that the anxiety component is slightly under-weighted, as explained in Section 2.

Following the usual canons of good test construction, items were balanced for response set. Thus, a left-side response contributes to high score as often as a right-side response, and, in each component except anxiety, a "yes" or "agree" response contributes to high score as often as a "no" or "disagree" response. In the anxiety-component, high score is more often associated with "yes" than with "no" because tendency to agree, in any type of item, is known to associate with higher anxiety level. The "yes-ness" in keying anxiety items thus adds to their intrinsic effectiveness as anxiety-measuring.

The test is arranged in a four-page booklet. The front cover page gives instructions for taking the test, plus two items which serve both as examples and as buffers. The test proper follows on the inside two pages, 20 items to a page in cyclical order as between the four components, and with the least threatening items placed earlier in the test, wherever possible. The back cover page contains arrangements for recording of test scores as well as for related clinical comment.
4. RELIABILITY AND VALIDITY

Reliability

Table 3 reports the homogeneity (or consistency) coefficients of reliability. Each of these is, of course, a correlation of parts of any scale with the other parts at one occasion of testing. For the four component scales the coefficient in each case is a split-half by a random split (five out of ten on one side and five on the other) with the two parts correlated. These values are corrected to full sub-scale length by the Spearman-Brown formula. For the total test the homogeneity coefficient is of the parallel split ("herringbone") type, i.e., one half of each sub-scale is on each side, and the correlation of the two parts is corrected to full test length to be comparable with the other coefficients.

Except for the slightly lower E component, the reliabilities for these brief sub-scales are of the order of +.60 to +.70, which is suitable for work involving discrimination between groups and, if used cautiously, for providing at least rough "leads" in diagnosing the individual case. It should be remembered, too, that the Table 3 reliability values are dependent on the sample used, and would have been considerably higher if neurotics had been included with normals in our sample, since neurotics differ from normals systematically and significantly on all these components, so that the scatter would be larger.

TABLE 3
RELIABILITY COEFFICIENTLY FOR THE NEUROTICISM SCALE QUESTIONNAIRE (NSQ):

SPLIT HALF CONSISTENCY COEFFICIENTS *

<table>
<thead>
<tr>
<th>Tenderness</th>
<th>Depression(F)</th>
<th>Submission</th>
<th>Anxiety</th>
<th>Neuroticism Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>.55</td>
<td>.57</td>
<td>.47</td>
<td>.70</td>
<td>.67</td>
</tr>
</tbody>
</table>

The reliability of the components is, of course, lowered by their sheer brevity. *The reliabilities attained with these 10-item scales are, in fact, rather impressive when one considers that, customarily, 40-or 50-item scales are the minimum for measuring one thing (e.g., in intelligence testing)."Leads" suggested by the brief 10-item scales can, if desired, be properly followed up by the more reliable measurements for each component available in the 16 PF TEST or the IPAT ANXIETY SCALE (6, 9), where 30 to 40 items are available for measuring each component.**

Validity

Two types of validity are reported: Concept (Construct) and Concrete (4).

(1) Concept (or Construct) validity is the correlation of the items in a given scale with the factor (concept, dimension, functional unit) they are designed to measure. These figures indicate the degree to which the
items in the anxiety component scale actually measure the anxiety dimension as defined empirically and factor analytically; and the same for each of the other three component scales. Values are not given for the total neuroticism score because, as noted before, this is not a unitary concept or single dimension, but is instead a composite of the four distinct components for which concept validities are separately given. The concept validities for each of the four NSQ components are as follows:

Tender mindedness
(I) = +.74

Depressio (F)=+.76

Submissiveness (E) =+.69

Anxiety=+.84

(2) Concrete validity is the correlation of the test with life performances and categories; in short, with a "pointed out" criterion in everyday life. There is an almost indefinite number of such relationships which might be of interest to a psychologist or educator, but we must concentrate here on the main concrete ("external") criterion towards which NSQ test construction was oriented—the ability to discriminate significantly between clinically-chosen neurotics and normals. To check on this point, the NSQ was administered to 102 clinically-judged neurotics (53 males, 49 females) at ten different institutional centers (to compensate for possible biases in diagnosis local to any one center). The 102 neurotics total NSQ
scores were found to be considerably higher than those for 1,068 normals, the
difference being confirmed at a very high level of statistical confidence (beyond
the .0005 level).* That is, the NSQ is very definitely a test of neurosis in the
concrete validity clinical criterion sense, for neurotics score significantly
higher than normals on it.

Far more extensive supplies of direct NSQ validity data will
soon become available, as the test is routinely used in clinics, industry,
schools, etc. These data will be published periodically in the IPAT INFOR-
MATION BULLETIN series, and forwarded promptly to NSQ users. For-
tunately, however, a considerable amount of somewhat less direct concrete
criterion validity data already exist on the neuroticism levels of some 4,000
persons in some 50 clinical and occupational categories. Most of these data
, reviewed in Section 8, are less direct in the sense that they did not arise
directly from the present NSQ, but rather from that portion of the more
comprehensive 16 PF TEST(9) to which the NSQ corresponds (see Sec-
tion 2). That is, precisely the same four factor-components as are measured
in the NSQ are measured by the 16 PF, and can be weighted exactly as
weighted in the NSQ. When these scores are converted into sten score
normative units, to the general population (see Section 8), they are almost
exactly comparable from test to test (16 PF to NSQ), just as I.Q.'s can be
comparable from test to test, even though measured by different items.
That is, even though the 16 PF does not use the same items as the NSQ, it

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measures demonstrably the same components (as well as many other components) and places the person in a percentile or other normative relation to the population on these components, exactly as the NSQ does.

The data in Table 5, Section 8 (some directly on the NSQ and some indirect, as described above) show that the following clinical categories have very significantly higher total composite neuroticism score than do normals: Neurotics (all types together in population proportions, Number in group=315); Anxiety Reaction Neurotics (N=84); Depressive Reaction Neurotics (N=42); Male Convicts (N=561); Alcoholics (N=111); Narcotics Users (N=103); Male Homosexuals (N=133); and several other groups of clinical interest. Each of these can be read as a concrete criterion validity statement, because it means that the test significantly discriminates between members of that category and normalcy (the data on the 315 neurotics being a confirmation of the crucial concrete validity just reported for the external criterion on 102 neurotics). Study of Section 8 will show that the same types of criterion validity statement can be made in many cases for each of the four NSQ component scores as well as total score, and in items of some occupational as well as clinical categories. Thus, on indirect as well as direct evidence, we already have an impressive serious of concrete (criterion) validities for the NSQ.

5. INSTRUCTIONS FOR ADMINISTRATION

The test is in the form of a single four-page booklet. Instruc-
tions and two practice questions are on the front cover page, followed on the two inside pages by the 40 questions of the test proper. Responses to the three-alternative items are marked directly on the test booklet. The back cover page is used by the examiner only, to record scores and related comments.

For either individual or group administration a well-lighted, quiet room with adequate writing surfaces is needed. The client or the examinee fills out the information at the top of the cover page. The test administrator then reads aloud the very simple test instructions while the examinee reads along with him and answers the sample questions. The administrator reads the instructions slowly, encourages questions on them, and answers such questions before allowing the test proper to being. Of course, his answers should not disclose the nature of the test instrument as a measure of neuroticism, and he should avoid referring to the test as a "neurosis" questionnaire.

After the instructions have been covered, the examinee begins the test proper. He may work at his own pace without interference, unless he is apparently having grave reading difficulties, in which case the administrator may read the questions aloud to him (if a private administration) or explain meanings of words in question. Clients who are spending too much time because of overlong pondering on each question should be reminded of instruction No. 3 on the cover page of the test booklet. The test is untimed,
but typically requires no more than five to ten minutes for clients who are not too severely disturbed and are above seventh or eighth grade educational level. Before permitting the examinee to leave the testing room, the administrator checks carefully that every question has been marked with one and only one answer.

The test can be administered either privately, to one individual at a time, or in group form to as many as several hundred persons at one time. An administrator and an appropriate number of assistants are desirable, but, if necessary, the test instructions and items are clear and easy enough so that self-administration is feasible for clients who possess a minimum of responsibility. In such cases, examinees should be reminded that they are to complete every item on the test, and that they should not consult with any one else in deciding their answers.

The NSQ can be re-administered to the same persons at intervals of as little as two weeks, e.g., to determine fluctuations in neuroticism level over time and/or in response to therapy or other conditions, for subjects apparently show negligible memory for particular responses made, after two weeks or more. If an even shorter re-testing interval is desired requiring different items in equivalent scales at each occasion of testing.

6. SCORING THE TEST BOOKLET

The test is scored directly from the test booklet. Higher scores mean more neurotic trend, to a degree indicated by the standardization.
Proceed as follows:

( 1 ) Scan the test booklet to ascertain that one and only one answer has been marked for each question. When, rarely, this condition is not met, proceed as described in the footnote below.

( 2 ) Place the scoring stencil on the test booklet, reading off the raw scores and adding to give the total neuroticism scores (also, if desired, the raw scores for each of the four neuroticism components). Simple, standard rules for placing and using the key are printed on the key itself.

( 3 ) If desired, convert the raw scores obtained to standard normative scores (relative to the population) as explained in Section 7.

(B) MULTI-VARIABLE PERSONALITY INVENTORY (MPI)

- DR. TARESH BHATIA
- ARUNIMA PATHAK

Essentially personality consists of those permanent or semi-permanent modes of behaviour which characterise an individual and make him or her different from other people. These individual differences are called 'traits' (Hans Eysenck).

The 'Multi-Variable Personality Inventory' (MPI) has been used for measuring the different personality variabales of an individual. The present inventory measures ten important variables of an individual.

To make a scientific selection of the variables of personality,

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15 relevant and meaningful variables of personality were taken. These 15 variables were given to seven experts in the field of psychology, for approval. The total number of variables over which the experts were unanimous were ten and these were further given to a group of another 5 experts to examine the content and format of these variables. These experts were almost unanimous regarding these ten variables and thus they were retained for the final form of the inventory. These variables were:

(a). Social Desirability - The state or quality of being socially desirable.

(b). Extraversion - A person whose basic orientation is towards the external world. Extraversion (and introversion, its dimensional opposite) can be investigated by whole range of personality tests. Extraverts are outgoing, sociable, rather impulsive and require constant stimulation from the environment.

(c). Psychoticism - Tendency of suffering from several mental arrangements.

(d). Dogmatism - Tendency of declaring opinion arrogantly. A somewhat unfashionable term related to the idea of closed-mindedness or the inability to form new cognitive systems of various kinds (Perceptual, conceptual etc).

(e). Ego-ideal - Individual's ideal perception or experience of himself. The ideal standard against which the Ego evaluates its activity and
qualities.

(f). Alienation - The feeling that one's life has no meaning that the human and natural world around one is impersonal mechanistic and unsympathetic. Person's scoring high would be suspicious, over-sensitive getting unusual sensations and sensory distortions.

(g). Emotional Instability :- Unhappy, nervous, emotionally labile, fearful, anxious and depressed. Person scoring high would be indicate that the individual has serious personality problems and would need psychological and psychiatric assistance.

(h). Self-Confidence - Belief in one's own abilities.

(i). Empathy - The ability to share and accept another person's feelings, while respecting their dignity and refraining from value and judgements.

(j). Dominance :- Certain personality as being dominant over others having control or authority or influence.

Item Selection

It was decided to write 15 to 20 items under each of the 10 variabes. In this way an initial pool of 185 items were ready for the entire Inventory. These -items were given to five experts for a rating. The items with 100 percent approval were retained and rest were dropped. Thus after the initial tryout, the 45 items were left. These items were further passed on to three experts with a request to rate each items on a nine point

[174]
scale (Extremely undesirable to Extremely desirable) in order to measure the social desirability tendency the items having value less than or equal to 5.00 (Mean Value) were rejected. Thus 20 items were dropped and 120 items were retained for further analysis.

The inventory was administered to the subjects of the sample of 300 students (Male and Female) for the purpose of item-analysis. The age range of the subjects was 15 to 22 years. Subjects were asked to respond to items as 'Yes or No'. Items measuring of particular variable positively and responded as 'True or Yes' given a score of one. The negatively worded items were given a score of zero for a true response and a score of one for false response. The higher the score, the higher was the subject on that variable. Item-analysis was done with the help of the method between two extreme upper and lower groups, as described by Anastasi (1968). Total 120 items were of good discriminative value, thus 20 items were dropped. In the final inventory there 100 'Yes-'No' type items.
**Reliability**

The coefficient of reliability was determined by test-retest method. The test was administered twice with a time interval of 20 days to a sample of 150 subjects. The test-retest reliability coefficient for each dimension of the scale was found out as follows:

<table>
<thead>
<tr>
<th>S.N.</th>
<th>Variables</th>
<th>Retest Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>a Social Desirability</td>
<td>.88</td>
</tr>
<tr>
<td>2.</td>
<td>b Extraversion</td>
<td>.84</td>
</tr>
<tr>
<td>3.</td>
<td>c Psychoticism</td>
<td>.79</td>
</tr>
<tr>
<td>4.</td>
<td>d Dogmatism</td>
<td>.81</td>
</tr>
<tr>
<td>5.</td>
<td>e Ego-Ideal</td>
<td>.83</td>
</tr>
<tr>
<td>6.</td>
<td>f Alienation</td>
<td>.87</td>
</tr>
<tr>
<td>7.</td>
<td>g Emotional Instability</td>
<td>.84</td>
</tr>
<tr>
<td>8.</td>
<td>h Self Confidence</td>
<td>.91</td>
</tr>
<tr>
<td>9.</td>
<td>i Empathy</td>
<td>.94</td>
</tr>
<tr>
<td>10.</td>
<td>j Dominance</td>
<td>.89</td>
</tr>
</tbody>
</table>

The split-half reliability method was computed for estimating the internal consistency and equivalence, which was found .89. Thus both these reliabilities are significant which indicate that the scale is highly consistent and reliable.
Validity

The Empirical Validity of the scale was found out by correlating the scale with some external criterion that is Multivariable personality Inventory by B.S.Muthayya. Both the test were administered to sample of 100 subjects and correlation was found out between different variables which were common in both the tests, indicated positive and significant correlation. Also the total score of the present inventory is high and significantly correlated with Muthayya's personality inventory total score (r=.77).

Administration of the Inventory

It is a self administrating inventory. There is no time limit for answering it. However most of groups should finish it in about 20 minutes, though there will be a few individual who would take much longer time. It should be emphasized that there is no right or wrong answers to the statement. They are constructed to have differences in individual's reaction to various situations.

Scoring Key

Scoring Key of the present Inventory is given as follows; give one score for the following responses, otherwise give zero score.
<table>
<thead>
<tr>
<th>Variables</th>
<th>Yes Response (Items having Yes)</th>
<th>No Response (Items Having No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Social Desirability</td>
<td>1,11,21,31,41,51,61, 71,81,91.</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>B. Extraversion</td>
<td>32,42,52,62,82</td>
<td>2,12,22,72,92.</td>
</tr>
<tr>
<td>c. Psychoticism</td>
<td>------</td>
<td>3,13,23,33,43, 53,63,73,83,93</td>
</tr>
<tr>
<td>D. Dogmatism</td>
<td>4,14,24,34,44,54, 64,74,84,94</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>e. Ego - Ideal</td>
<td>5,15,25,35,45,55, 65,75,85,95</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>f. Alienation</td>
<td>6,16,26,36,46,56, 66,76,86,96</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>g. Emotional Instability</td>
<td>7,17,37,47,57,67, 77,87,97</td>
<td>27</td>
</tr>
<tr>
<td>h. Self Confidence</td>
<td>8,18,28,38,48,68, 78,88,98</td>
<td>58</td>
</tr>
<tr>
<td>i. Empathy</td>
<td>9,19,29,39,49,59, 69,79,89,99</td>
<td>59</td>
</tr>
<tr>
<td>j. Dominance</td>
<td>10,20,30,40,50,60, 70,80</td>
<td>90,100</td>
</tr>
</tbody>
</table>
(C) Socio-Cultural Environment Attitude Scale

By- Dr. Taresh Bhatia
Dr. K.B.L. Srivastava

Research in environment psychology encompasses a broad spectrum of topics, including perceptual and cognitive processes, orientations to places and settings, social and behavioural processes and environmental design and environmental problems.

An increasing body of knowledge and theory has focussed on cognitions, perceptions, meanings attachments and attitudes to places at all levels of scale (Down and Stea 1973). Such research includes studies of environmental meaning, the feelings people have about places, the effect of various dimensions of places on behaviour.

**Development of the Scale :-**

The purpose of constructing the attitude scale is to measure attitude towards socio-cultural environment. It is Likert type scale consisting of 46 items with five alternative statements in each. The items are related to following sub-areas -

(a) Social attitude
(b) Attitude towards family
(c) Attitude towards their teachers
(d) Attitude towards authority
**Item - Analysis**

It was decided to write items under each of the four areas. In this way an initial pool of 75 items were ready for the scale. These items were given to five experts for rating. The items with 100 percent approval were retained and rest were dropped. Thus after the initial try out the 61 items were left.

The scale was administered to the subjects of the sample of 250 for the purpose of item - analysis. The age range of the subjects was 20 to 40 years. Subjects were asked to respond in terms of their agreement or disagreement with the items in a five point continuum namely strongly agree, agree, uncertain, disagree and strongly disagree. Item analysis was done with the help of the method between two groups. Discriminative values were computed for item-selection. All the items were then arranged in descending order of their 't' values. Out of 61 items, the first 46 items were selected for the final form of the scale. Thus these items are presented in the simple statements and provide five alternative response options graded on a given point scale.

**Reliability** - The coefficient of reliability was determined by test - retest method. The test was administered twice with a time interval of 30 days to a sample of 100 subjects. The test-retest reliability coefficient for each area of the scale was found out as follows-
<table>
<thead>
<tr>
<th>Sub-areas</th>
<th>Test - Retest Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Social Attitude</td>
<td>.84</td>
</tr>
<tr>
<td>b. Attitude towards family</td>
<td>.91</td>
</tr>
<tr>
<td>c. attitude towards their teachers</td>
<td>.81</td>
</tr>
<tr>
<td>d. Attitude towards authority</td>
<td>.87</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>.89</strong></td>
</tr>
</tbody>
</table>

**Validity**

The validity of the scale was established with the help of construct validity on the basis of interval consistency.

**Administration**

It is a self administering scale. There is no time limit for answering it. However most of the groups should finish it in about 15 minutes. It should be emphasized that there is no right or wrong answers to the statement.

**Scoring Key**

It is a five point scale, the scoring of which has been objectified by assigning five to one score respectively for five alternatives of the positive items, rated strongly agree to strongly disagree. For the negative items the scores assigned to each of alternatives have been reversed. They range from one to five for five alternatives.
The following table shows item distribution in the various subareas:

<table>
<thead>
<tr>
<th>Sub-areas</th>
<th>TOTAL ITEMS</th>
<th>Positive Items</th>
<th>Negative Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Social Attitude</td>
<td>10</td>
<td>1,2,3,4,5,6,7,8</td>
<td>-----</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9,10</td>
<td></td>
</tr>
<tr>
<td>b. Attitude towards family</td>
<td>25</td>
<td>11,12,13,14,15,16</td>
<td>19,28,30,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>17,18,19,20,21,22</td>
<td>31,32</td>
</tr>
<tr>
<td></td>
<td></td>
<td>23,24,25,26,27,28,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>29,33,34,35</td>
<td></td>
</tr>
<tr>
<td>c. Attitude towards their Teachers</td>
<td>03</td>
<td>36,37</td>
<td>38</td>
</tr>
<tr>
<td>d. Attitude towards authority</td>
<td>08</td>
<td>39,44,45,46</td>
<td>40,41,42,43</td>
</tr>
</tbody>
</table>

TOTAL ITEMS | 46 | 36 | 10 |

(D) The revised Bhatia's short battery of performance tests of Intelligence for adults

By - Dr. S.K. Verma

& others

A number of verbal and performance tests of intelligence are
available in India. Amongst the performance tests, the 'Bhatia's Battery of performance Tests of Intelligence is perhaps the most widely used because it is easy to administer, score and interpret. The credit goes to Dr. C.M. Bhatia who standardized this battery, simplified the scoring procedure and provided local norms, both for the literate and the illiterate subjects separately. This battery consists of five sub-tests and requires 45 to 60 minutes for its full administration.

In order to reduce the testing time, Murthy (1966) advocated the use of Kohs Block Design and the Pass Along tests-as a short battery, which was found to be as sensitive as that of the full battery. It uses the same administration and scoring procedures except that the sum of the scores on two tests are multiplied by 2.5 and the Bhatia's norms are consulted to arrive at an I.Q. This Battery was originally standardized for the individuals in the age range of 11-16 years and is used on adults (above 16 years of age) as well on the assumption that intelligence does not increase beyond 16 years of age. As such there is no norms for adults. What-so-ever norms are in use were developed four decades back only on male population and on 2 educational groups (literate and illiterate). Therefore, there is an urgent need for upward deviation of this battery so that one can use this on adults as well, with greater confidence and certainty.

It also desirable to have norms for different educational categories because the subjects of different educational backgrounds have dif-

Some of the individual also plays an important role in influencing the performance of an individual on an intelligence test because in our country males and females have different roles and responsibilities in almost every sphere of life.

The present study was designed keeping in view the above considerations and the need felt to prepare the norms for adults covering the entire spectrum of age, educational and sex.

REVIEW OF LITERATURE

Bhatia's Battery of Performance Tests of Intelligence is frequently used in our country both for clinical and non-clinical population because Indian norms both for literate and illiterate subjects are available (Bhatia, 1955). This test of intelligence measures 3 things:

(i). General Mental Ability
(ii). Spatial factor, and
(iii). Memory.

The full battery consists of five sub-tests:
(i). Kohs' Block Design Test
(ii). Pass Along Test
(iii). Pattern drawing
(iv). Immediate memory span

[184]
(ν). Picture construction.

'Kohns' Block Design' measures the abstract reasoning of the subject whereas 'Pass Along Test' measures the practical ability. Both Picture construction' and 'Pattern Drawing' tests measure the spatial ability and Immediate Memory Test' measures the short-term memory span of the subject. The four performance tests (leaving Immediate Memory) give a 'performance quotient' which is akin to the 'intelligence quotient'.

The full battery requires 45 to 60 minutes for its administration. An attempt was made to reduce the time of testing. It was noticed that the Block Design, Test and the Pass Along test could give an accurate I.Q. on clinical and non-clinical populations (Murthy, 1966) and is called short scale. This short scale requires 20-30 minutes for its administration and is also used for measuring I.Q. of the subjects beyond 16 years of age with an assumption that intelligence does not increase beyond this age. During the adulthood individual learns from social experiences. In other words, fluid intelligence classes its development at the age of 15 or 16 years but crystallized intelligence which is more important for verbal behaviour continues to develop probably because of continuing and competitive interactions with people in society, at work and by use of the resources of information in put (Verma, Pershad, Singh and Singh, 1982). Unfortunately separate norms of this scale are not made on the subjects beyond the age of 16 years. Therefore, there is an urgent need for upward revision of this scale so that one
can use it on adults as well, with greater confidence and certainty.

It is also desirable to have norms for different educational categories because the subjects of different educational backgrounds have different psychological test sophistication affecting the responses on tests (Wig, Verma and Pershad, 1974, 1983; Pershad, 1977 and Verma, 1978).

Moreover, cognitive test scores are generally found to have high correlation with the education of the tests (Pershad, 1977). Any educational experiences the individual undergoes, should be reflected in this performance on tests sampling the relevant aspects of behaviour (Anastasi; 1963). Many other research workers also feel that education is an important variable on psychological test (Sorokin, 1947; D'Amato, 1970). This fact, however is never taken into consideration fully while preparing the norms. The question here arises, why we have forgotten to do so? There are two possible answers to this question:

Firstly, while preparing the norms we don't care about the differences in the two cultures and their development. In the developed countries probably everyone is required to undergo a formal basic education whereas in the developing and underdeveloped countries a large proportion do not get the similar opportunity and a wide disparity in the schoolings of the population existed. Therefore, there is a need for norms which are based on education of the subjects.

Secondly while preparing the norms for intelligence tests we
are trying to compare the subjects with the average norms of the nation irrespective of the group of culture to which he/She belongs. An individual should be compared with the individuals of the same group or culture to which he/she belongs. Therefore, no illiterate person should be compared with an educated person who has different capabilities, experiences, facilities, aspirations and avenues and opportunities. It is, therefore, to have local, specific and relevant norms which are based on schooling of the subjects belonging to the specific group. This need is likely to be continued longer until and unless equality of educational opportunities are provided to all (Mahajan et al. 1987).

Farrell (1982) opined that Indian educational opportunities could not be provided to all unless four conditions like equality of access, equality of survival, equality of output and equality outcome are fulfilled. These conditions are hard to be met and with the best efforts India's literacy cannot enrich even 80% by the end of 21st century.

Besides the variables like age and education, sex is another important variable which can influence the performance of an individual on an intelligence test. Sex differences were reported with regard to performance on intelligence tests. Girls were found to be superior to boys on the performance tests. It was also revealed that boys developed the differentiation of abilities in themselves earlier than girls (Hundal, 1969).
The role that sex plays is important in our country because males and females have different responsibilities in almost every sphere of life. As compared to males, females have less opportunities and fewer contacts, with other individuals in the community as they still live in home and look after the domestic and household issues. On the other hand, during the process of occupational and social interactions outside the home, males have frequent and broader links or contacts with other persons. Therefore, it can be assumed that males act and respond differently because of their broader outlook and interactions with other persons in the society. Therefore, a male should be compared with the males of same age and education and a female should be compared with the females of same age and education, so no female can be compared with the male who has different outlook of the life (Mahajan et. al. 1987).

Socio-economic background and the familial environment play an important role on the development of intelligence. Children from higher economic status homes scored higher on intelligence tests than the other groups (Murlidharan, 1970). Environment variants and intellectual performance of young children of parents from middle and low and high and low were found to be significantly different (Singhal, 1969).

Nutrition is another variable which seems to be linked with mental development. Malnourished children showed noticeable declines in intellectual area and the degree of intellectual deficiency was positively related to the severity of malnutrition (Warner and Murlidharan, 1970, Pasricha [188])

Another variable which can influence the intelligence is the order of birth in the family. It was reported that as the size of the family increases the children's I.Q. decreases. The eldest child tends to do much better than later born children in general and also higher I.Q. scores(Doughlas, Ross and Simpson, 1968, Davie et. al. 1972).

Intelligence is somewhat related to different caste groups. Kundu(1970) compared the intelligence test scores of Bhil and high caste Hindu delinquents and non-delinquents. It was found that Bhil delinquents differed significantly in intelligence scores from Bhil non deliquents on Bhatia's Battery of performance Tests of Intelligence. Similarly high caste Hindu delinquents and non delinquents differed significantly in the test scores.

After reviewing the various studies conducted on the variables which can influence the performance of an individual on intelligence tests and keeping all the needs in mind this project was launched with the following aims and objectives :-

Objective :-

The main objective of the study was to develop norms of the Bhatia's Short Battery of Performance Tests of intelligence for adults belonging to different age, education and sex groups.

Corollary to this following two sub objectives were also set:

1. To find out the concurrent validity of the Bhatia's Short [189]
Battery of performance Tests of intelligence for Adults (correlation with other tests of intelligence)

2. To find out the relationship of the scores of Bhatia's Short Battery of performance Tests of Intelligence with age, education and sex of the adult subjects.

MATERIAL AND METHODS

Sample :-

The present study was conducted in clinical psychology unit of the department of psychiatry, Postgraduate Institute of Medical Education and Research, Chandigarh. The attendants of the patients who were referred for psychological assessments and psychodiagnostic evaluations, were requested to participate in the study. Seven hundred twenty apparently healthy adult subjects in the age range of 20-59 years were included. It also included 50 psychiatric patients. A 4x3x2 design as shown below was followed:
TABLE I

<table>
<thead>
<tr>
<th>Education Age in years</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5 6-9 10+</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-29</td>
<td>30</td>
<td>30</td>
<td>180</td>
</tr>
<tr>
<td>30-39</td>
<td>30</td>
<td>30</td>
<td>180</td>
</tr>
<tr>
<td>40-49</td>
<td>30</td>
<td>30</td>
<td>180</td>
</tr>
<tr>
<td>59-59</td>
<td>30</td>
<td>30</td>
<td>180</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
<td>120</td>
<td>720</td>
</tr>
</tbody>
</table>

Procedure

The subjects were appraised of objectives of the research program and on their consent they were administered the Bhatia's Short Battery of Performance Tests of Intelligence consisting 'Block Design' and 'Pass Along' tests. The procedure of the administration of the scale remained same as described in the manual.

The time taken by the subjects was noted accurately in seconds with the help of stop watch (fraction of a second was rounded off). On some of the subjects, where possible one other test of intelligence amongst

[191]
Hindi WAIS-R Verbal, Wechsler's Adult Performance Intelligence Scale (Indian Adaptation), Raven's Standard Progressive Matrices was also administered.

Row scores of Kohs' Block and Pass Along tests were converted into standard scores with an assumed mean of 100 and SD of 15 according to the following formula:
\[ \text{T.Q.} = (\text{x-Mean} \times 15) + 100 \] (Garrett 1971)
S.D.

**Modification in Scoring:**

While administering the Kohs' Block and the Pass Along tests on the adult subjects for the purpose of standardization of Bhatia's Short Battery of Performance Tests of Intelligence, the experience and observations of the researchers about the scoring of these two tests was not satisfactory especially for the deprived subjects (low literacy level, rural background, poor SES, etc.). It was noticed that many of them were unable to proceed beyond first two designs of the Block design and the pass Along tests, thus, obtaining low scores. On account of this the discriminating capacity of the short battery has been low (Pershad, Arunima, Verma, 1988). It was further observed that the few of these subjects were quick in solving the problems presented of them while others have been taking more time. Inspite of this difference they obtained the same scores. These two problems compelled the researchers to modify the scoring procedure, to enable
them to increase the discriminating capacity of the scores. After a loud
tinking (using "thinking aloud method") and discussion with the collegues
the range of the score for each item was doubled. Instead of giving score
for the block of each minute the scoring was resorted for the block of 30
seconds each. The two scoring procedures, the original and modified are
given below in table 2.

\begin{table}
\caption{Time limits for scoring Kohs' Block pass Along Tests}
\begin{tabular}{ll}
\hline
Original & Modified \\
\hline
KOHS, BLOCK DESIGN TEST & \\
91-120 & -1 \\
121+ & -0 \\
\hline
\end{tabular}
\end{table}

Last 50\% designs i.e. VI to X

\begin{center}
\begin{tabular}{ll}
\hline
upto 60 secs & -3 \\
61-120 & -2 \\
121-180 & -1 \\
180+ & -0 \\
\hline
upto 30 & -6 \\
31-60 & -5 \\
61-90 & -4 \\
91-120 & -3 \\
121-150 & -2 \\
151-180 & -1 \\
181+ & -0 \\
\hline
\end{tabular}
\end{center}

Max Possible Score = 25 \quad Max Possible Score = 50

PASS ALONG TEST

First 50\% designs i.e. I to IV

[193]
Modified method = \(( X-8.68/3-65 \times 15 ) + 100\)

**For Pass Along Test**

Original Method = \(( X-6.03/1.75 \times 15 ) + 100\)

Modified Method = \(( X-11.0/3.07 \times 15 ) + 100\)

<table>
<thead>
<tr>
<th>Upto 60 secs.</th>
<th>61-120</th>
<th>121+</th>
<th>Upto 30 secs.</th>
<th>31-60</th>
<th>61-90</th>
<th>91-120</th>
<th>121+</th>
</tr>
</thead>
<tbody>
<tr>
<td>-3</td>
<td></td>
<td></td>
<td>-4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-1</td>
<td></td>
<td></td>
<td>-3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-0</td>
<td></td>
<td></td>
<td>-2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Last 50% designs i.e I to IV

<table>
<thead>
<tr>
<th>Upto 60 sec</th>
<th>61-120</th>
<th>121-180</th>
<th>181+</th>
<th>Upto 30 secs.</th>
<th>31-60</th>
<th>61-90</th>
<th>91-120</th>
<th>121-150</th>
<th>151-180</th>
<th>181+</th>
</tr>
</thead>
<tbody>
<tr>
<td>-3</td>
<td></td>
<td></td>
<td>-1</td>
<td>-6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-2</td>
<td></td>
<td></td>
<td></td>
<td>-5</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>-1</td>
<td></td>
<td></td>
<td></td>
<td>-4</td>
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<td></td>
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<tr>
<td>-0</td>
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<td></td>
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<td>-3</td>
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<td></td>
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<td></td>
<td></td>
<td>2</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Max. Possible Score = 20

Max. Possible Score = 40

Besides the original procedure this scoring procedure was also adopted firstly on 210 low literate subjects, including both males and females. The range of the obtained scores in the modified scoring procedure

[194]
was almost doubled as expected. In the original method it was 2-13 and 3-12 whereas in the modified it rose to 3-23 and 6-21 for the Kohs' Block Design test and the Pass Along test respectively. The means and S.Ds of the original and the modified methods are given in Table 3. The correlations between the two scoring procedures were found to be very high and satisfactory (97 and 96 for Block Design and Pass Along Tests respectively).

TABLE 3
Comparison of the two scoring methods (N=210)

<table>
<thead>
<tr>
<th></th>
<th>Original</th>
<th>Modified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Koh's Block Design test</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td>2-13</td>
<td>3-23</td>
</tr>
<tr>
<td>Mean</td>
<td>4.81</td>
<td>8.61</td>
</tr>
<tr>
<td>S.D.</td>
<td>2.05</td>
<td>3.65</td>
</tr>
<tr>
<td>Pass Along test</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td>3-12</td>
<td>6-12</td>
</tr>
<tr>
<td>Mean</td>
<td>6.03</td>
<td>11.0</td>
</tr>
<tr>
<td>S.D.</td>
<td>1.73</td>
<td>3.07</td>
</tr>
</tbody>
</table>

The standard score assuming mean of 100 and S.D. of 15 were determined from the original and the modified procedures separately to find out whether the modified scoring procedure was finer than the original one or not. Formula used to convert the raw score into the standard score (called Test Quotient=T.Q.) separately for two sub-tests is given
below:

\[
\text{Standard Score} = T.Q. = (X - M* \times 15^+ ) + 100 + S.D * 
\]

For Kohs' Block Test

Original Method = \((X - 4.81 \times 15^+) + 100 \)

\[
2.05
\]

Modified method = \((X - 8.68 \times 15^+) + 100 \)

\[
3.65
\]

For pass along Test

Original Method = \((X - 6.03 \times 15^+) + 100 \)

\[
1.75
\]

Modified method = \((X - 11.0 \times 15^+) + 100 \)

\[
3.07
\]

Comparison of increase in T.Q. points for each raw scores
Converted T.Q. points for the raw scores

<table>
<thead>
<tr>
<th>R.S.</th>
<th>Kohs' block</th>
<th>Pass</th>
<th>Along</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Original</td>
<td>Modified</td>
<td>Original</td>
</tr>
<tr>
<td>1</td>
<td>72</td>
<td>68</td>
<td>57</td>
</tr>
<tr>
<td>2</td>
<td>79</td>
<td>73</td>
<td>65</td>
</tr>
<tr>
<td>3</td>
<td>87</td>
<td>77</td>
<td>74</td>
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<tr>
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<td>94</td>
<td>81</td>
<td>83</td>
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<tr>
<td>5</td>
<td>101</td>
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<td>100</td>
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<td>8</td>
<td>123</td>
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<td>131</td>
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</tbody>
</table>

It showed that the modified procedure could assess even a lower T.Q. than was possible with the original procedure. In the original method, an increase of one (raw score) increased the standard score by 7-8 points on the Block Design test and 8-9 on the Pass Along test whereas with modified procedure the same increase in raw score caused an increase of only 4-5 points of standard score. This indicated a greater sensitivity of the
modified scoring procedure maintaining a high correlation with the original one. Keeping in view the above considerations i.e. greater sensitivity of the modified scoring procedure and finer grouping or placing of the subjects, the modified procedure was used in the present research and the tables of norms were prepared following the same method.

(v) The Collection of data :-

The data was collected from the districts of Bundelkhand region of U.P. which were Jalaun, Hamirpur, Banda, Jhansi Lalitpur and Mahoba. As stated earlier 100 criminals within age of 20 to 40 belonging to I.P.C. 302, 307 and dacoity were taken and similary 100 normal persons within same age group and same areas were taken.

In Jalaun district mainly Rampura block, kuthaund block, mahewa block and Kadaura block were area of operation.

In Banda District, visiting areas were Karvi, Manikpur Baberu, Jaspura, nareini, pailani and belt of Kain river. In Hamirpur the investigator along with his group studied in criminal belt of Gohand Muskara, and kurara. In mahoba, the visited areas, are soopa, Galiah, charkhari etc.

Jhansi in comparison to other District of Bundelkhand region of U.P. has less graph of crime therefore only Jhansi and Moti were visited.

Lalitpur was found peaceful area but some localities and area within Lalitpur were of great importance in this research. The normal persons (100) who lived in same situation and area were studied most of the
persons were Farmers, teacher, Govt. employees, and Agriculturalists.

During collection of Data the areas were distributed into areas of criminals belt- (i) uneducated belt (ii) educated belt. (As mentioned in sample)

(vi) **The Statistical Analysis**

The statistical operation followed for the present research involved the parametric and non-parametric techniques.

Mean, S.D. and 't' test were used for finding out the significant differences between normal and criminal person's attitude towards socio-cultural environment, neuroticism and their personality factors. Quartiles were computed for getting highest and lowest 25% cases on different personality factors as high and low.

Analysis of variance was adopted to find out the effect of type of person (Normal and Criminal) and personality factors (High and Low) on attitude towards socio-cultural environment.

Chi-Square was used for finding out the significant difference between normal and criminal person's Intelligence level, view about Crime-season, areas and classes.