CHAPTER III
METHODOLOGY

Definitions:

Creativity - Definition of creativity based on primary factors has been widely accepted. In most of the studies following Guilford, interests are restricted to DP abilities. For our purposes too, we confine creativity to the following DP abilities:

'Abilities of fluency, flexibility and originality of thinking, of redefinition and elaboration as they are seen in the performance on paper-pencil tests'.

Intelligence - Intelligence was popularly defined as an ability to profit by past experience. In the previous chapter it has been seen that modern psychologists have eliminated this type of comprehensive use of the concept. They would rather prefer to define it with reference to specific tasks so as to isolate it from other mental operations. Generally these tasks confront S to a difficult and intricate problem. They require abstract and analytical thinking and demand the unique and correct response. The response, however novel and appropriate, if it does not conform to the expectation, is wrong and does not add to the score. In the present study, a similarly limited concept of intelligence has been accepted.

Personality - By personality we mean 'the pattern of motivation and of temperamental and emotional traits of the individual (in contrast to cognitive traits and abilities)' (English and English, 1958).
A fuller note on the various approaches followed in the study of personality will be given in the Chapter V.

Specification of the Problems and Hypotheses:

Once we accept these definitions, the procedure to follow becomes partly determined. The rest will depend on the hypotheses to be tested and the challenging problems that will have to be met with as a first requisite. They are listed here:

Problems - 1) The first and foremost problem is, do the measured factors of creativity indicate a unified cognitive capability?

2) It has been shown that above 120 I.Q. point or 95th percentile, intelligence does not guarantee the creative performance any more (McKinnon 1964). The second problem is to test this threshold point for Indian sample.

Hypotheses - 3) There is some sort of 'ebb and flow' in creative test performance and creativity in general. These 'ebbs and flows' for creativity will not be necessarily at similar age levels as those for intelligence.

4) The effect of age and grade will vary with different tests even with those which assess the same factor.

5) Creativity and intelligence, the two types of cognitive excellences are associated with diverse personality characteristics. We hypothesize that this relation will not be so general as to use these characteristics to predict creativity in the performance of an average person. Only at higher levels of mental ability
these characteristics can be used as discriminators of creative potential.

6) It has been previously found that creatives rather than intelligents are maladjusted in the school (Getzels 1962). To step a little further it may be suggested that not only their adjustment problems are different but given the same problematic situation they will also differ in their perception and response to it.

7) The next hypothesis is that mothers of creatives and mothers of intelligents will expect different qualities from their children. However, in their self-perception the creatives will tend to divert from their mother's expectations.

8) Creatives are less tolerated by their teachers (Getzels 1962). The writer thinks that the reciprocal of this teacher-student relationship should be equally true. If teachers are so much in favour of the intelligents, they should be more liked by the intelligents.

9) In their likes and dislikes, interests, attitudes and other aptitudes, the creatives and intelligents can be well discriminated.

These are various propositions. Some old and others newly formulated. We shall test these. However, the major interest is of exploration. We want to know the creative individual as thoroughly as possible.

**Setting:**

**Why single school?**

The scoring procedures of creativity tests put forth some unusual problems. On most of the creativity tests
the score is number of responses, which varies not only with age, sex and grade but also with school. This limits our choice of the sample. However, while restricting the sample, following conditions should be observed.

Firstly, any hypothesis regarding creativity intelligence distinction should be tested on a wider range of intelligence and age; and secondly, creativity sub-test scores should not be added unless they are converted into standard scores. So to avoid a difficult task of preparing norms by age, sex, grade and school, a single boys' high school, namely, Modern High School, Shivajinagar, Poona-5, was chosen as a setting for the study.

*Why This School?* This choice was based on the consideration of various factors.

Heterogeneity -

This school is on par with other leading schools in Poona, where we can expect to find students highly gifted in creativity and in intelligence.

Dnyana Prabodhinee, the institute for gifted children, used to administer Raven's Standard Progressive Matrices (1956) every year, to more than thousand average and above average boys from the grade 8th of all Marathi medium schools. The writer administered this test in most of the schools for two years, 1965 and 1966. All the schools were compared regarding intelligence level of the students. Statistics (1965) about five leading schools is given here.
It was ascertained from the concerned authorities of the Modern High School that the students from this school belong to parents having varied occupations, come from different castes and range between the income groups widely apart. Our results also guarantee the heterogeneity of the sample in this respect and normality regarding intelligence.

Physical environment:

The physical environment outside and in the school is quite favourable for test administration. The school building is well constructed, isolated and situated in an open area. The class rooms are spacious allowing fresh air and sun and are furnished properly. These things, however minor, are to be considered because even in the city like Poona some schools cannot provide these facilities which are essential for an adequate test situation and which would be conducive to concentrated work.

Separate Arrangement for Testing:

Most of the testing was arranged in a special room. In this room individual seats were provided for all students.

1. This information is based on records in the school office.
The seats were so arranged as to prevent even the least
communication among students and at the same time to provide
indirect supervision.

Arrangement for indirect supervision was thought
to be requisite to make students least conscious of the
supervisor and to allow them freedom from examination
setting. This is essential for free emission of creative
potential.

Sample:

The sample was drawn from students from the grade
seventh through eleventh. Each grade has six streams,
A to F. Students are placed in ascending order from F to A
according to their intellectual ability (as it is judged by
school marks). However, this selective placement is not
strictly followed, and the lower streams D, E and F do not
differ so much from each other, in respect of mean
intellectual ability of the students. From the grade VIII
upwards students choosing technical subjects are bifurcated
into a separate class. In the last year of the school,
placement depends on the optional subjects chosen by the
students.

Boys from only four streams of preferred grades
(A to D of the grade seventh and A, B, Tech. and C of the
higher grades) were included in the sample. The exclusion
of the grade fifth and sixth was inevitable because of the
use of Raven's Advanced Progressive Matrices (1962) as
one of the independent variables. This test restricts the
lower threshold of the sample age on the age eleventh. The expected mean age of the sixth grade population is 10 at the beginning of the academic year. However, in the grade seventh we got some students of this age and even below, and the sample \( (N = 1054) \) ranged from the age 9 to the age 20. Consequently, 'ten years and below' group \( (n = 59) \) was dropped out from further research.

**Tools of Measurement**

The measures employed in the present study are simply listed here. The detailed description follows in the next section \( A \) and three other sections \( B, C \) and \( D \) presented through Chapters \( V, VI \) and \( VII \).

I) **Measures of Cognitive Ability:**

*Independent variables:*

(A) A battery of creativity tests -

(1) Word Association \( (WA) \)
(2) Word Fluency \( (WF) \)
(3) Utility \( (U) \)
(4) Pattern Meaning \( (PI) \)
(5) Make a Figure \( (MF) \)
(6) Object Naming \( (ON) \)
(7) Plot Titles (clever) \( (PTA) \)
(8) Plot Titles (non-clever) \( (PTB) \)

2. In the discussion hereafter, the symbols in the brackets will be used for the test names.
(B) An intelligence test:
Advanced Progressive Matrices (1962) Set II
(APM)

Dependent variables

(C) Bennett's Mechanical Comprehension Test
(Form AA)

(D) School marks (as an index of scholastic achievement) (SM).

II Personality Adjustment Tests and other Variables

1) Interests regarding academic subjects, games and hobbies.

2) Ratings: Peers and teachers.

3) The Personality Inventory by Bernreuter.

Measures employed for the upper 20 p.c. groups:

4) Bell's School Inventory.

5) Pasadena Pupil Judgement Test.

6) Speed of Verbal Thinking - an indirect sentence completion test.

7) A Self-perception Test.

8) Personal Data Sheet.

9) Teacher's Ratings.

10) Your Expectations About Your Child
(used for mothers)

11) Student Interview.

12) Parent Interview.
Procedure:

Pilot Study: Six months before the major work a pilot study was conducted in order to get acquainted with creativity test regarding control of the test situation, scoring of the test, and students' behaviour on the test. Only three creativity tests, F1, T1, and U, and Raven's Standard Progressive Matrices (1956) were given to 50 boys. Results and other details of this study need not be reported.

Major Work:

Controls: The students and teachers were kept ignorant of the whole programme to avoid communication among them. The whole class was called at a time but all classes were tested in a predetermined random order. Ten minutes before the session started, a note was sent to the teacher in the class asking him to send all the boys with a pencil or pen (pencil only for APA) at a given time. As a discipline more often than not the teacher himself brought all the students to the testing place. However, he did not remain in a room for supervision.

For creativity tests there are two administration problems. Freedom from time pressure and examination setting is essential for uninhibited manifestation of creativity. Attempt was made to meet both the requisites.

The problem of time pressure will be discussed in the section of 'Instrumentation'.

If the test atmosphere is too evaluative, it hampers creative output; if game-like, it is difficult to administer to a large group and to observe essential conditions. So
before and while administering the test, effort was made to make the atmosphere less evaluative and to make the boys feel at ease. Though these were paper pencil tests, it was clearly emphasized that students should not be conscious of their handwriting and the test should not be taken as if it were an examination. The experimenter talked to the group to create friendly atmosphere.

The selection of 'upper 20 p.c.' groups based on their scores on independent variables and classification of these into other sub-groups was done by assistants. All students were given code numbers. The experimenter never knew the group to which student under consideration belonged, until the scoring, interviewing, qualitative analysis and interpretation were over.

Administering creativity tests:

First Session: Seven creativity tests were administered in two sessions. First five in the first session and the last two in the second session. The first session required 60 minutes. The actual test period was of 40 minutes. After finishing their writing of the responses on the last test, all students were asked to rate three of the friends in their own class and three of the teachers teaching them that year. One minute per item was given for the ratings.

For this session 990 students were present.

Second Session: The second session usually lasted for 35 minutes. The actual testing period was of 20 minutes for two creativity tests. At the end students were asked to rank three academic subjects, three hobbies and three games
according to their preference. One minute per item was given.

For the second session 984 students were present.

A period of 4 to 8 days elapsed between these two sessions for each class. The first session period started on 7th June 1967 and ended on 14th June. The second one started on 14th and ended on 17th of the same month. During the second session, because of accidental reasons test conditions could not be observed in the class XI-C. The test responses of these students, during that session, were discarded, and the class ($N = 60$) was omitted for intelligence tests and further deeper explorations.

**Personality Inventory:**

**Third session:** On 10th of June, Henreuter's Personality Inventory was given to all students in one session. (Time 9.30 a.m.) Teachers were informed previously, were urged to co-operate and were given written instructions as to how to get these questionnaires filled in by their students. In all there were twenty teachers. Five more proctors helped the teachers. The maximum students available were 1054. The experimenter herself was present during the administration of this test. Yet least supervision and help were needed. Teachers also were given the same questionnaire which they filled in immediately or later on and sent it to the experimenter in closed envelopes.

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3. Letters and instructions sent to the teachers are reproduced in the Appendix.
Intelligence test:
Fourth Session:

Raven's AP4 was given to 921 students. The administration started on 19th of June and was spaced over a period of 10 days and by its end, the first part of the testing programme ended.

Responses by three students - one emotionally disturbed, the other bias against psychological tests and the third giving false personal information - were considered insignificant and excluded without their notice. These students used to attend all sessions.

Attempt was made to test as many students as it was possible in proper conditions. All responses fulfilling the given conditions were used for norms. But for correlational studies only 828 students who were present for all creativity and intelligence tests, were used. Students in upper 20 p.c. on either or both dimensions were selected from this group.

Selecting Upper Twenty per cent:

The score distribution of each independent variable was checked for normality of distribution, and creativity and intelligence raw scores were converted into standard scores, and creativity subtest standard scores were added to get a composite score (CrT). Students lying above 80th percentile point on either or both dimensions were selected for further explorations. Three groups were formed. Students

4. Students belonging to the technical division attend the Technical High School nearby, for the technical subjects. For AP4 and further tests, they were assessed in that school. This school already has very good provision for the test administration.
above this point on creativity and on intelligence (HH, N = 59), students above this point on creativity but not so on intelligence (HL, N = 91), students below this point on creativity but above 1st on intelligence (LH, N = 110).

**Further Testing:**

**Fifth Session:**

These students were administered Speed of Thinking test Bell's School Inventory, Pasadena Pupil Judgement test and Self Perception test, all in one session but one after another in the order given above. Personal data sheets were given to them in the beginning and the students filled them in between two tests or at the end. This session was carried out from 8th January to 10th January, 1968. For this session 260 students were present.

**Sixth Session - Teachers and mothers:**

(1) For the teachers - Rating scale

On 12th of January 1968, the experimenter invited all the class teachers of the concerned classes (N = 19). They were explained how teachers' opinions are important in a psychological study of children and were asked to rate the students whose names are entered in the scales given to them. They were told that it was a random selection.

For the mothers - Check lists:

(2) The highest 25 students on each dimension were selected. 'Your Expectations About Your Child' was sent to their mothers. Mothers checked the characteristics expected from their children, and sent forms back to the experimenter.
Forty-six forms were received. In the cases where two or more students came from the same family, separate forms were sent.

**Seventh Session - Mother and Child:**

*Interviewing -* For the clearer finishing of the creative individual's picture as contrasted from the intellectual in his thinking process, emotional life and family environment, a few cases were studied. First five on creativity and first five on intelligence were selected for this study but one of them could not be interviewed. The remaining nine got divided into three groups, HI (4), HL (2) and LH (3). We are aware that the number is too small to warrant any generalization, however we feel that certain trends will emerge which can be definitely treated as hypotheses.

These students were interviewed in the school. Special room was provided for the interview programme. The programme was spaced over four days from 17th to 20th of January 1968.

During the same period, their homes were visited and mothers were interviewed there. Letters were sent to them previously, congratulating them for their children ranking so high on a psychological test. They were urged to provide all necessary information regarding their children and themselves, which would be very useful in a study of gifted child. Everywhere interview was held in isolation and nobody disturbed in between. Though only mothers were asked to stay at home, fathers also wanted to see the experimenter
and give any more information wanted. In fact, at the end of the interview, the whole family would gather in the room and interviewer was fortunate enough to know the '3' in his family.

Scoring, data processing etc.

Standardized scoring procedures were used to evaluate the responses to the various instruments. The procedures are described at relevant places. Most of the scoring was done by two research assistants, under experimenter's direction. However, where the scoring was rather complex it was done by the experimenter herself. All creativity tests were evaluated twice by independent assistants. For all other tests, every fifth sheet was scored again to assure exactness. All sheets were scrutinized by the experimenter to eliminate bizarre and unreliable responses.

Reliabilities and validities as established by original authors have been assumed to remain unaltered in the present study because changes done in the process of adaptation are only extrinsic. Though pretesting was done for every instrument before finalizing the Indian versions.

The sample used in this study was almost normal on intelligence (Table No. 10). So the author thinks it least objectionable to assume the same reliabilities for the present type of study.

Of course this limits the applicability of the conclusions arrived at. The veraciousness of the results will depend on the extent to which our assumption stands the test.
Where scores depended on the content analysis of the responses inter-scorer reliabilities were found out. The other scorer (Miss Manda Bakare) had obtained a post-graduate degree in Psychology.

To be objective and precise, all variables were given a code by the experimenter. All data were coded by the assistants according to the given code.

Tabulation was done with the help of ICT punching and sorting machines. All data were distributed along three types of eighty column cards. Programming, sorting, tabulating, decoding and statistics were done by the experimenter.

Statistical analysis comprised the following. Means and standard deviations were found out for almost all variables. Analysis of variance for creativity variables controlling age and grade, and for various dependent variables controlling creativity and intelligence, were worked out. Correlational analysis included intelligence, creativity variables, scholastic achievements (as indicated by school marks), mechanical comprehension, and four personality traits. Multiple and partial correlation methods also were used. Inter correlations between intelligence and creativity variables were analysed and 5 factors were established. A 2x2 (intelligence x creativity) factorial design was employed for further statistical analysis in deeper explorations with personality factors and environmental conditions.

Results of these analyses are noted in succeeding chapters from IV through VII.
Instruments: A Closer View (A).

Before discussing the results with the help of abstract numbers and trying for meaningful interpretation, it is necessary to look into the nature of various variables used. In this section only independent variables will be described. In that the construction or adaptation of a test will be explained, its rationale will be given, a few responses will be illustrated and the scoring procedure will be mentioned in brief. All measures will be reproduced in the appendix. Instructions, time limits and scoring guides also will follow there.

Creativity Tests:

Time limits — Though Guilford's tests have been used in this study, his procedure is not followed in all respects. For his tests of fluency, he insists on rapid generation of responses. See for example his description of Make-a-Figure test which is used in the present study: "Given three lines, e.g. two short, straight lines and a curved line, make different combinations in limited time" (Guilford and Hoepfner, 1966, p. 9). For other tests also the time limits set by him are very brief.

In fact Guilford had noted that more original responses emerge later. In Plot Titles (clever), clever responses were constantly produced, and the proportion of remote, unusual responses increased with time (Christensen, Guilford and Wilson, 1957). In this respect we have to return to associational interpretation of creativity by Mednick who
characterizes creative production by shallow hierarchy of associations (Mednick 1962). In a shorter time person with stereotyped responses having steep hierarchy will produce more, but over a longer time shallow curve being more extensive will assume more unusual responses. This implies that if we want to discriminate between persons with usual and persons with unusual responses, we should set prolonged time limits.

However, as Wallach and Kogan (1965) observe, time pressure and examination like setting are the characteristics of the studies following Guilford. In the study by Getzels and Jackson (1962) there is either time pressure or a feeling of inadequacy created by the examiner waiting for the slow workers. In Torrance's work (1960) Wallach and Kogan found both 'temporal coercion' and 'evaluative stress'.

It seems that Wallach and Kogan disapprove even the word 'test' and denote their measures of creativity as 'tasks' or 'procedures'. They employ game like procedures having least consideration of time. There is no doubt that, "... temporal freedom and a non-test context ... are important, if something akin to creativity is to be assessed." (Wallach and Kogan 1965, p. 21). Yet their objection against the use of group tests in creativity studies seems unwarranted. Establishment of game-like context requires the experimenter work individually with each subject and if it is the only procedure, creativity tests cannot be group tests. What matters more is not the way we describe creativity measure, as a 'task' or as a test, but the atmosphere created by the examiner. It may be a group test or individual test, 'instructions' is the powerful control.
This controlling factor was gainfully used in the present study to create examination free context. The instructions given to the subjects can be seen in the appendix IV. To achieve freedom from time pressure attempt was made in the following manner.

Finalizing time limits:

All creativity tests were tried first on a group of 20 students. These students ranged from the grade fifth to the second year of college. There was no time restriction for any test, and students were asked to write as many responses as possible. They were told that good handwriting and punctuation were not the essential things, and were asked to raise their hands when they would feel satisfied or unable to write any more. The experimenter noted down the time for each student and optimum time limits were chosen. In that, for all creativity tests, experimenter had to increase the time set by original authors. This was based on the consideration of two factors that subjects won't lose the interest and also get sufficient time for the emergence of using unique responses. In the study proper the author observed that very few could write till the end and that too with considerably decreased speed.

Selection of items in the test was based on their stimulation value and their relevance for the Indian situation. The test administered to this group, consisted more items than those retained finally. Number of total responses per item was the direct measure of stimulation value of the item. Degree of relevance was judged by the
preferences given by the students. After they had finished the test, they were told to rate the items in the test according to their appreciation and/or to choose only those items that should be included in the test if only the given number of items is to be retained.

Verification:

Before this pre-testing, WA, J and PM were used in the pilot study. The same forms were employed in the pilot study and in the pre-testing group. The responses by two groups were compared. The items marked out by the pre-testing group (N = 20) for their inclusion in the final version were the same as those which elicited maximum responses by the pilot study group (N = 50). These groups were entirely independent and not matching.

Guilford's Tests:

In first two of the following Guilford tests no alteration was done except time limits.

Make-a-Figure:

The stimulus item of this test has been described in the previous discussion (P 76).

In the upper left corner of the test paper, the stimulus pattern is given. The whole paper is divided into number of squares. Students are asked to construct as many figures as they can, one in each square, using only the given three lines.

Three lines may be joined in various ways simply to make the pattern appear different. After joining like
they may be joined as in figure 14. Some of the responses are quite meaningful. For example consider the figures like \[.\] The last three letters are from devanagari script. Of course how far the response is meaningful to the S who constructs it, is unknown. Though some responses appear to be more meaningful or unusual, the only variable number of responses conforming to the given specifications can be measured.

Object Naming:

In the present instrument the student is to write names of plants and fluids. Name of any object which would conform to the given class can be written.

In this instrument too, no change regarding stimulus, has been made. Number of appropriate responses is the score. All kinds of responses were listed together. A list of plants was got examined by a botanist. In the class of fluids, many students wrote names of acids and alkalis, sometimes only chemical symbols. These were scrutinized by a science teacher.

Students tended to write things from their near environment. Some proved their keen observation and openness to experience; while others were not able to reproduce very common things seen in every day life. Names of plants varied from very common trees as mango and banyan to the stationary plants and even some insectivorous plants. The fluids commonly named were all sorts of drinks, soups and sometimes some secretions and excretions. There were unusual responses like 'rubber and gum in their original form'.
Even within the same given class, responses shifted from one sub-category to another, proving flexibility of thinking. However, the test was not scored for spontaneous flexibility, and number of appropriate responses was the only measure.

Word Fluency:

This is a very simple task. A letter 'Na' (न) in devanagari script is given and students are asked to write words containing that letter. They can write any word from regional language.

The test used for pre-testing contained four letters. The stimulus letter which elicited maximum response words, was chosen. Rules for scoring had to be formulated as stimulus letter from Guilford tests could not be used for a test in regional language. The task specifications do not involve any meaningful stimulation. Consider for example the response words like Nata (नाता), Patena (पटेना), Annala (अनला) and so on. The only common ingrain is the presence of letter 'Na'.

Utility:

In this procedure, students write uses, 'real or imagined', for the things paper and glass. The version employed in pre-testing included names of seven things out of which only two were retained on the basis of their stimulating power.

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5. Wherever there are items more than one scores are summed across the items.
Three variables, fluency, spontaneous flexibility and uniqueness were measured for both the items, in the same task. Rules were formulated to determine uniqueness, categorization and appropriateness of the response. Number of responses was fluency score and that of shifts of classes was flexibility score.

The procedure for arriving at a criterion of uniqueness was rather laborious. Percentage for each response category within the grade group was found out. Responses mentioned by less than 10 per cent students were taken as unique. Wallach and Kogan (1965) set the criterion for uniqueness as 'one and only one'. Guilford discriminates five levels of uncommonness, each differing from the next by 20 p.c. distance. Getzels and Jackson (1962) consider those responses which are mentioned by 20 p.c. of students, as unique responses. In the present procedure the upper 10 p.c. level is the demarcation line between commonness and uncommonness. To agree entirely with Wallach was impossible because very few responses were unique in the sense he defines. Getzels too could not be followed because many responses were within 20 p.c. level and to consider them uncommon was rather meaningless. To use Guilford's procedure was inconvenient. So all responses were only dichotomized. How unusual, the unusual response was, not considered.

Thus for each of two items three scores were given. Number of uses, number of different uses and number of uncommon uses. These scores were summed up to get a total score.

In this procedure student's imagination is more unrestricted. His ability to modify the environment according
to the requirements of his own ideas, free multi-faced imagination can be more at work. For examples of the responses to the present items look to the following:

Use of glass: to see an image, to cut, to magnify, blood test, insulation, to murder, to cover, on the fence, ornaments, glass house, to write (on and with).

Use of paper: To write an essay, crackers, book marker, for reselling, to protect from light, for mischiefs.

Plot Titles:

In the test composed for pre-testing group six plots were included. However, only two which were most appreciated were retained.

In this procedure students are asked to give appropriate titles to the given plots. The plots are quite brief. Use of adjectives has been avoided. The same plots were scored for associational fluency and originality. Number of all relevant titles is fluency score and number of clever, unusual, remote responses was originality score. Two scores were not added.

Guilford's scoring guide was strictly followed. The criteria were discussed with another judge (Miss Bakre) and when there was a common agreement on the accepted criteria, every tenth paper was scored by the judge and writer. The inter-judge reliability was .93.

Some of the illustrative responses are not reproduced here, as their original significance in regional language would not remain so if merely translated into other language.
Some titles are rephrases of other titles of books, poems, or movies. Some titles indicated quite a powerful artistry. A few for example: PT\textsubscript{A} – Quickwit, And the tears bloomed into flowers. PT\textsubscript{B} – Be versatile (!), Man proposes and ass ...

**Word Association:**

This instrument measures subject's ability to shift frames of references within an organised structure (Getzels 1962, P. 199). A list of 20 common words having various meanings was prepared. This was used in pre-testing. Only eight items were retained on the basis of previously described procedure. Students were asked to give different meanings of each word, through associated words each indicating different meaning or reference world.

Number of different meanings was the score. To determine the appropriateness of a response word, dictionary (Molesworth 1857, Date 1950) was considered as an authority. (As these meanings and associations are confined to a regional language, illustration in English is not possible.)

**Pattern Meaning:**

This test from Vallach and Kogan (1965, Fig. 1 & 5, p. 34) differs from the aforementioned tests. The authors expect it to be 'more independent from intelligence than the other tasks' used in the present study.
vertical straight lines three of which are drawn below
and two are drawn in between these three but a bit above.

Here the stimulus is figural, as less specified
as possible, letting individual to follow varied streams
of ideas. The response is verbal and semantic.

From the original instrument only two items are
included in the present one, on the basis of the procedure
followed for previous tests. This test confronts the
subject to a rather difficult task. The stimulus pattern
is more abstract. Student has to elaborate the given stimulus,
as to transform it. His responses come from various
categories. Thus apparently the instrument is not
(relatively) factor pure like Guilford's tests i.e. it seems
to be significantly loaded by more than one SI factor.

The test was not administered in the same manner
as Wallach did, nor was it scored for uniqueness as he did.

As illustrative responses consider some of the
eamples as following.

Pattern 1 - A straight line and five circles —
A rocket dashing through stars, bubbles from a tube, circles
being drawn by a pencil, a fountain, frame of a hut etc.

Pattern 2 - Five straight lines — Raining, 'sky line',
symbol of Pancha Sheela, rays coming through holes etc.

Intelligence Test:

Advanced Progressive Matrices (APM) — Raven's
Progressive Matrices can be briefly described as tests of
clear thinking and observation. Being culture free, they are
used world over. Standard Progressive Matrices (1956) (SPM)
can be used for a wider range of intelligence while AP4 is more suitable for above average person. To test the authenticity of the proposition that at higher levels of intelligence creativity ceases to be the function of intelligence, an instrument finely discriminating these levels, is necessary. AP4 has some additional advantages. Within a short time, only by giving a practice set of 12 items, the general intellectual level of the person can be assessed. Two sets are printed in separate books. The practice set is administered first. This controls the familiarity with the method of working to some extent. Only Set II is scored. It consists of 36 items. Time is 40 minutes. This set provides a means of assessing all the analytical and integral operations involved in the higher thought process and differentiates clearly between people of even superior intellectual ability' (Raven, 1962).