

Master's Degree Programme in Psychology

HANDBOOK ON PRACTICUM EXPERIMENTAL PSYCHOLOGY AND PSYCHOLOGICAL TESTING (MPCL-007)



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1.0 INTRODUCTION TO PRACTICUM IN PSYCHOLOGY

Psychology at graduate and post graduate levels requires learners to learn how to conduct practicals. Practicals consist of psychological experiments and tests that are to be carried out in controlled condition in a laboratory set up. The experimenter/ administrator has to follow a standard procedure for administration, scoring and interpretation of the results/ findings.

Experiments in psychology make use of different instruments/ apparatus to study different cognitive aspects such as sensation, perception, attention, memory, learning etc. They mainly focus on studying the cause and effect relationship between independent and dependent variables. Psychological tests on the other hand are administered in order to find out the cognitive, affective and behavioural functioning of the subjects.

It is well known that children, adolescents and adults show certain maladaptive patterns in their behaviour, which may be due to a large number of psychological factors. Through psychological tests, the psychologist is able to unravel the causing factors underlying the dysfunctional behaviours. Psychological tests can be used in different settings like schools, hospitals, organisations and welfare organisations. They can also be used for research purpose.

The psychological tests are of various types. Some are used to find out the level of cognitive functioning such as Intelligence, Memory, Thinking, Problem solving etc. Certain other tests are used to find out personality, aptitude, attitude, interest, emotional disturbances and conflicts in the individual. Some tests may also be observational where the individual's behaviour is observed in different situations and under varying conditions.

Tests also vary in terms of the mode of administration. Some tests are paper pencil based tests which require the subject to read the items and respond with alternative answers. Other tests are projective tests where certain semi-structured or structured materials (verbal, pictorial, or any other) are shown to the subject and the subject has to respond by telling a story based on the picture or respond by telling what they perceive. All these responses are scored and interpreted. A good psychological test is always a standardized test, which means the test follows a uniform and systematic procedure of administration and scoring. It also has a manual in which the reliability, validity and the norms are provided.

2.0 PRACTICUM IN MA FIRST YEAR (8 CREDITS)

The following practicals are to be conducted by the learners:

- Intelligence Testing (Bhatia Battery)
- Personality Testing (16 PF)
- Test for Social Behaviour (Vineland Social Maturity Scale)
- Family Pathology Scale
- Sociometry
- Problem Behaviour Checklist

- Span of Attention Experiment
- Memory Experiment

All eight practicals are to be conducted by the learner in the psychology laboratory. Out of the above eight practicals, five practicals are to be written in proper format (as given in the lab manual) in practical note book. This note book is to be assessed by the concerned academic counselor. Actual conduction of practicals and reporting it in practical note book (internal assessment) carries 50% weightage and the term end practical examination including viva- voce (external assessment) carries 50% weightage. The internal and external assessment will be in terms of marks which will later be converted into grades.

3.0 PROCEDURE TO BE FOLLOWED BY ACADEMIC COUNSELLOR

For Experiments in Psychology

- 1) Select any experiment from experimental psychology book based on the list of the practicals given above. You may refer to some of the reference books given as follows:
 - Experimental Psychology by L. Postman & J. P. Egan
 - Experiments in Psychology by S. M. Mohsin
 - Experimental Psychology with Advanced Experiments (2Vols.) by M. Rajamanickam
- 2) Explain the experiment in detail to the learners
- 3) Introduce the experiment in terms of:
 - Historical background
 - Hypothesis/es
 - Independent and dependent variables
 - Control and experimental conditions
 - Administration
 - Scoring
- 4) After the introduction of the experiment, demonstrate to the learners how to conduct the experiment.
- 5) The demonstration will include the following:
 - Preparation for the experiment, for instance, keeping the material (instrument/ apparatus, stimulus words/ list, stopwatch) ready.
 - Establishing rapport with the subject, making the subject feel comfortable
 - Explaining the experiment (procedure, time limit, precautions)
 - Taking informed consent for undergoing the experiment and informing the subject that the experiment findings will remain confidential.
 - Taking permission to record the session, wherever applicable.

- Explaining the instructions to the learners.
 - Clearing all doubts in the mind of the subject about the experiment.
 - The experiment is conducted on the subject.
- 6) Explain the scoring procedure to the learners.
- 7) Explain how to discuss the data.
- 8) Ask learners to conduct the experiment on each other in pairs and monitor the same.
- 9) The learners will now conduct the experiment and do the scoring.
- 10) The learners will have to write a report of the experiment in the practicum note book which will be evaluated by the academic counsellors.

For Psychological Tests

- 1) Go through the manual of the test thoroughly.
- 2) Explain the test in detail to the learners in the class.
- 3) Introduce the test in terms of:
 - History of the Test
 - Author
 - Development of the test
 - Features of the test (e.g. no. of items, dimensions, reliability, validity)
 - Administration
 - Scoring
 - Interpretation
- 4) After the introduction of the test, demonstrate to the learners how to administer the test.
- 5) The demonstration of administration will include the following:
 - a) Preparation for the test, for instance, keeping the test material (test booklet, answer sheet, stopwatch) ready.
 - b) Establishing rapport with the subject, making the subject feel comfortable
 - c) Explaining the test (procedure, time limit, precautions)
 - d) Taking informed consent for undergoing the test and informing the subject that the test findings will remain confidential.
 - e) Taking permission to record the session, wherever applicable.
 - f) Reading the instructions for test administration from the manual and showing it to learners as to from where they have to read the instructions.
 - g) Clearing all doubts in the mind of the subject about the test administration.
 - h) The subject takes the test.
 - i) Taking the answer sheet from the subject after completion of the test. .

- 6) Explain the scoring procedure (as given in the manual) to the learners.
 - 7) Explain how to interpret the data.
 - 8) Ask learners to administer the test on each other in pairs and monitor the same.
 - 9) The learners will now administer, score and interpret
 - 10) The learners will have to write a report of the test in the practicum note book which will be evaluated by the academic counsellors.
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4.0 FORMAT FOR PRACTICUM

The academic counsellor introduces the following format to the learners which they have to follow while preparing their practicum notebook.

- **Title:** This heading will contain the ‘title’ or ‘name’ of the practical e.g: 16 PF / Span of attention.
- **Aims/ Objectives:** This will basically consist of the main objectives or purpose of the practical. For example, if they are performing a test on ‘16 PF’ then the basic objective of the test will be: ‘To assess the personality of the subject using 16 PF’.
- **Hypothesis (written in case of experiments only):** A tentative statement about the cause and effect relationship between the independent and dependent variables is provided.
- **Introduction:** Here the historical background of the test/ experiment is mentioned. The concept is defined and discussed. For example, in case of 16 PF, the historical background of 16 PF is described. The concept of personality is defined and the theories related to it are discussed.
- **Description of the Test/ Experiment:** Under this, the details with regard to the test/ experiments are mentioned, like author of the test, basic purpose of the test, no. of items, dimensions/ factors, time limit, reliability, validity, scoring.
- **Materials Required:** The materials required for the administration of the test/ experiment are mentioned. For example, in case of 16 PF, the test booklet, answer sheet, scoring key, pencil, eraser.
- **Subject’s Profile:** This will contain of all the detailed information about the subject, like, name of the subject (optional), age, gender, educational qualification and occupation.
- **Procedure and Administration:** The following sub headings are included here

Preparation: The material required for conduction of the test/ experiment, like, test booklet, apparatus or instrument, answer sheet, stopwatch are kept ready.

Rapport: The learner has to mention that rapport was created with the subject and that the subject was well informed about the details of the test/ experiment.

Instructions: Instruction as give in the test manual/ experiment are included here.

Precautions: Precautions, if any, to be considered while administration of the test/ experiment are mentioned under this sub heading.

Introspective Report: After completion of the test/ experiment by the subject, an introspective report is to be taken of the subject, that is, the subject's feeling and constraints faced by him/her while undergoing the test/ experiment is mentioned under this sub heading in first person.

- **Scoring and Interpretation:** After the subject completes the test, the answer sheet is to be scored with the help of the scoring key and the data is to be interpreted with the help of the norms given in the manual. The scores can then be mentioned and interpreted under this heading. For experiments, the findings are to be analysed and mentioned here.
- **Discussion:** Here, the subject has to discuss the result based on the interpretation. It may be further analysed in the light of the introspective report. In case of experiments, the results may be supported by existing studies conducted in the field.
- **Conclusion:** Under this heading, the learner has to conclude the findings of the test/ experiment.
- **References:** The books, websites and the manual referred to by the learner are mentioned in American Psychological Association (APA) format.

5.0 EVALUATION

Actual Conduction of Practicals and reporting it in the practical note book in the prescribed format (internal assessment) carries 50% weightage. The Term End Practical Examination including Viva Voce (External Assessment) carries 50% Weightage. Total marks for practical examination will be 100 marks (Internal 50 marks and External 50 marks).

INTERNAL	Marks	Weightage	EXTERNAL	Marks	Weightage
Attendance	10	10%	Conduction	10	10%
Conduction	10	10%	Answer sheet	20	20%
Interpretation	10	10%	Viva Voce	20	20%
Practical notebook	20	20%			
TOTAL	50	50%	TOTAL	50	50%

6.0 A BRIEF GUIDE TO PRACTICALS

➤ Bhatia's Battery of Performance Test of Intelligence

In our day to day life we often say, '*she is very intelligent*', or '*he is a brilliant learner*'. We make judgments about others' mental ability by their behaviours and specific achievements. Do you think one can measure '*how much intelligent a person is?*' This is exactly what psychologists started with and endeavored to develop some scientific procedures to tell about the how and what type of mental ability a person possesses. But measuring something which can't be directly seen, as with all psychological attributes, is really a very difficult task. And in case of intelligence, the task was more challenging. Since measuring something requires a simple answer to what is being measured. The interesting thing about intelligence is that every test developed to measure it defined it in its own way.

What is Intelligence?

Wechsler has defined intelligence as “the aggregate or global capacity of the individual to act purposefully, to think rationally and to deal effectively with his environment.” Alfred Binet, the inventor of modern intelligence test, believed that intelligent behaviour would be manifested in such mental abilities as reasoning, imagination, insight, judgement and adaptability. Some psychologists held the view that all the cognitive abilities (such as abstraction, learning and dealing with novelty) are the manifestation of a single underlying factor, called General factor and Specific abilities such as artistic ability, linguistic ability, mathematical or spatial ability referred constitute specific factor or *s* factor.

Thus, we may define intelligence as

- The ability to behave adaptively
- The ability to function successfully within a particular environment
- Ability to learn new things quickly, to solve different kinds of problems

Moreover it is said that intelligence is what the intelligence test measure, “Intelligence is, conceptually, what it has always been, the ability to profit from experience-and pragmatically, what it has become—that which the intelligence tests measure” (Reber & Reber 2001: 361).

Origin and Early Developments

The first attempt to develop tests of intellectual ability was made more than century ago by Sir Francis Galton, a naturalist and a mathematician, in 1884. James McKeen Cattell (1860-1944) has also made significant contributions to the measurement of individual differences. But the mental testing movement began with the development of the first intelligence test by Alfred Binet and Théophile Simon in 1905.

The French government commissioned Binet to discover an objective method of assessing intellectual level of French school children. The major concern was to identify children who were unable to profit from public school education. The task for Binet and Simon was

- To devise a scale that would select retarded children
- Indicate the nature of special instruction that could benefit those children
- To improve the diagnosis of severely retarded institutionalized children, though it was the secondary objective.

Binet assumed intelligence should be measured by tasks that required reasoning and problem solving abilities. Binet published the first test in 1905 in collaboration with Simon and revised it 1908 and in 1911. The test was constructed with items of common information, word definitions, reasoning items, and ingenuity. The measure of intelligence was mental age (MA). Binet and Simon assumed that intelligence grows with the child's chronological age (actual age). Thus the child who passes all the items at the 7 year level is mentally 7 years of age irrespective of his or her chronological age (actual age) or we can say the child is able to do the test items that 50 to 75 % of 7 year old children can pass. In Binet's views, a slow or dull child is like a normal child whose mental growth is retarded. The slow child would perform on the level that is below his actual age whereas the bright child can perform up to the level of the children above his/her chronological or actual age. The items in the Binet's scale are arranged in increasing difficulty.

The higher a child could go on the scale in answering the item, the higher his/her mental age will be. In 1916, Lewis Terman, published the Stanford revision of Binet test, that is known as the Stanford Binet Intelligence Scale (SBIS). Terman adapted the test items developed by Binet for American school children. SBIS was revised in 1937, 1960, 1972 and in 1986. Binet's concept of MA was retained in SBIS. But Terman used *intelligence quotient* as an index of intelligence. The term IQ, from the German *Intelligenz Quotient* was suggested by the German psychologist William Stern (1912). Intelligence quotient (IQ) expresses the relation of mental age (MA) to the real age (chronological age-CA):

$$IQ = \frac{MA}{CA} \times 100$$

IQ is calculated by dividing a child's mental age in months by his CA. An average child of 7 years whose MA is also 7 years, his IQ will be. $\frac{84}{84} = 100$. The number 100 is used as a multiplier to eliminate the decimals. So the IQ of this child will be 100. IQ in intelligence tests now is no longer calculated using this equation.

Tables are used to convert raw scores on the test into standard scores, which express the IQ. 1986 version of the test uses percentiles to express the level of intelligence in a particular group. The 1986 revision of the Stanford-Binet is grouped into four broad areas: verbal reasoning, abstract/visual reasoning, quantitative reasoning and STM. Terman chose the following category ranges for score levels on that test with standard deviation 16.

Table 1: Terman's Stanford-Binet Fourth Revision Classification

IQ Range (“Deviation IQ”)	Intelligence Classification
164 and over	Genius or near genius
148 - 164	Very superior intelligence
132 - 148	Superior intelligence
113 - 132	Above average intelligence
84 - 113	Normal or average intelligence
68 - 84	Dullness
52 - 68	Borderline deficiency
Below 52	Definite feeble-mindedness

The above scores are obtained by converting raw scores into standard scores. Raw scores are the actual scores obtained on the test. These scores are converted by the tables which contain age appropriate standardized scores given in the manual. It was felt that Stanford Binet test depended heavily on linguistic ability. In 1939, David Wechsler developed a new test-Wechsler Adult Intelligence Scale (WAIS). WAIS comprises of a verbal scale and a performance scale. These two yield a separate IQ and a full IQ. Later, similar tests were used by Wechsler for children, Wechsler Intelligence Scale for Children-WISC (1958). The verbal scale in WAIS consists of

information comprehension, arithmetic similarities, digit span, vocabulary and letter number sequencing. The performance scale consists of digit symbol, picture completion, block design, picture arrangement, matrix reasoning, object assembly and symbol search. Both the Stanford and Wechsler scales show good reliability and validity and are widely used tests to measure intelligence. Wechsler proposed different category ranges with a standard deviation of 15 by which IQ scores could be explained.

Table 2: Wechsler's classification

IQ Range (“Deviation IQ”)	Intelligence Classification
145 and over	Very superior
130 - 145	Superior
115 - 130	Above average
85 - 115	Average
70 - 85	Below average
60 - 75	Borderline
60 and below	Defective

All the above tests were individual tests of intelligence, i.e. these tests can be administered on one person at a time. The wider social settings sought after the need for such test that can be given to a large number of population at a time. Group ability tests were devised for such purpose. Group ability tests can be administered to a large number of people by a single examiner and are usually pencil and paper test. Individual test focuses on global ability, their major purpose being to assess a general trait. The focus of the group tests is to predict academic or occupational performance. Group test of intelligence are more often used for initial screening in schools (Scholastic Assessment Test-SAT) and industries. These tests may be followed by individual testing if more information is required. Individual tests are preferred by psychologists in clinics, hospitals and other settings where a clinical diagnosis is required.

Apart from the individual and group test, another major division is verbal and non-verbal tests. As the name implies, verbal tests can be used with educated persons while non verbal tests are preferred for uneducated persons, and those handicapped in some respect (like blind, partially sighted). Paper pencil tests and performance tests are one more variant of intelligence test. Performance test require the some sort of activity, like arranging the blocks, completing a picture with the given cards and choosing a correct matched card for a particular picture or symbol.

At present, many IQ tests have been developed to suit the cultural milieu of an individual. There are also culture fair tests that are applicable to all the persons irrespective of their culture. Culture-fair tests are free from any verbal content that measure culture specific and linguistic knowledge. Now we will give you brief introduction to Bhatia Battery of Performance Tests that learners are required to do for their course work:

Bhatia's Battery of Performance Test of Intelligence was constructed by C. M. Bhatia in 1955. This test was developed for use on Indian Population. It includes following five sub tests.

- i) **Koh's Block Design Test:** This battery includes 10 designs from the original 17 designs from the Koh's test. The time for first five designs is 2 minutes and for the remaining five the time is 3 minutes. The cards with a variety of coloured designs are shown to the test taker and he is asked to reproduce them using a set of colored blocks. Performance is based not just on the accuracy of the drawings but also on the examiner's observation of behavior during the test, including such factors as attention level, self-criticism and adaptive behavior (such as self-help, communication, and social skills).
- ii) **Alexander Pass-along Test:** All the designs of the original test are included in this battery. The first four of these have to be completed in two minutes and the rest of the four have to be completed in 3 minutes.
- iii) **Pattern Drawing Test:** This test is constructed by Bhatia. This test includes eight cards. Every card has a pattern and the subject is required to draw these patterns in one go without lifting the pencil. The time for the first four cards is 2 minutes and for the rest of the four cards it is 3 minutes.
- iv) **Immediate Memory:** This test has two parts: digit span forward and digit span backward. The test taker is required to repeat the numbers the examiner says. The number of digit is increased on every trial. The test is continued till the subject repeats it successfully in the same order. This is digit span forward. In the backward recall, the numbers are repeated in the backward position, from the last to the first. This recall is also continued till the subject successfully repeats the sequence.
- v) **Picture Construction Test:** This test requires the subject to construct a picture that is given in parts. The parts are to be meaningfully combined to construct the picture. The time for first two pictures is 2 minutes and the rest of the three pictures it is 3 minutes.

Individual administration of this test takes less than one hour. Maximum 95 marks can be obtained in the complete test. Maximum marks for the 1st, 2nd, 3rd, 4th, and 5th test are 25, 20, 20, 15, 15 respectively. The main objective of the test is to measure the intelligence of children and less educated or illiterate Indians. The norms for the test have been obtained for the boys of 11 and 16 years. Later, the norms for girls have also been obtained.

➤ 16 PF

A number of approaches and theories have been developed to understand and explain the concept of personality. These theories are based on different models of human behavior. Each throws light on a significant aspect of personality but not all aspect of personality. Psychologists distinguish between type and trait approach to personality. Type approach attempts to comprehend human personality by examining certain broad patterns in the observed behavioral characteristics of the individual. Each behavioral pattern refers to one type in which individuals are placed in terms of the similarity of their behavioral characteristics with that pattern. Whereas, the trait approach focuses on the specific psychological attributes along which individuals tend to differ in consistent and stable ways.

Efforts to categories people into personality types have been made since ancient times. The Greek physician Hippocrates had proposed a typology of personality based on fluid or humor. He classified people into four types (*sanguine, phlegmatic, melancholic* and *choleric*); each

characterised by specific behavioral features. Ayurveda classifies people into the categories, *Vat*, *Pitt*, and *Kapha*, on the basis of three humoral elements called tridosha. There is another typology of personality based on the Trigunas, i.e. *Sattva*, *Rajas* and *Tamas*. All the three gunas are present in each and every person in different degrees. The dominance of one or the other guna may lead to a particular type of behaviour.

Sheldon using body build and temperament as the main basis, proposed *Endomorphic* (fat, round, soft, relaxed, and sociable), *Mesomorphic* (strong body build), *Ectomorphic* (thin, long, fragile body build) classification. Jung proposed another important typology by grouping people into *introverts* and *extroverts*. Recently, Friedman and Rosenman have classified individual into Type A and Type B personality. Type A personality seems to possess high motivation, lack patience, feels short of time, and be in a great hurry. Such people are prone to developing coronary heart disease and hypertension. Absence of such traits is Type B personality. Morris suggested a Type C personality, one that is prone to cancer. Type D personality is characterised by proneness to depression. Trait theorists are mainly concerned with the description of characterisation of basic components of personality. They are mainly interested in the ‘building blocks’ of personality. Human beings display a wide range of variations in psychological attributes, yet it is possible to club them into smaller number of personality traits. A trait is considered as a relatively enduring attribute or quality on which one individual differs from one another. They include a range of possible behaviour that is activated according to the demands of the situation. A number of psychologists have used traits to formulate their theories of personality, for example, Allport, Eysenck, Cattell.

16 PF is constructed by Raymond B. Cattell. According to Cattell there is a common structure on which people differ from each other. This structure could be determined empirically. With the help of statistical technique called factor analysis, he discovered the common structures. He found 16 primary or source traits. The source traits are stable, and are considered as the building blocks of personality. Besides these, there are also a number of surface traits that result out of the interaction of source traits. Cattell described the source traits in terms of opposing tendencies. Cattell developed Sixteen Personality Factor Questionnaire (16 PF), for the assessment of personality. This test is widely used by psychologists.

The test, as already said, is constructed by Raymond B. Cattell, and was first published in 1949, thereafter 2nd and 3rd edition in 1956 and 1962. Five alternative forms of the 4th edition were released between 1967 and 1969. Fifth edition of 16 PF was released in 1993. PF stands for ‘Personality Factors’ and there are sixteen personality factors, hence, it is known as 16 PF. These 16 factors are the major source traits. Cattell’s theory asserts that every person possesses a degree of each of the following sixteen traits (Cattell also uses the term *factors*).

For each trait, factor label or code letters are used. The major source traits as represented on 16 Personality Factor Inventory is as follows:

Factors	Description
A	Outgoing- Reserved Outgoing-Reserved
B	Intelligence
C	Stable-Emotional
E	Dominant-Submissive
F	Sober-Happy-go-lucky
G	Conscientious-Expedient
H	Venturesome-Shy
I	Tough-minded-Tender-minded
L	Trusting-Suspicious
M	Imaginative-Practical
N	Shrewd-Forthright
O	Apprehensive-Placid
Q1	Radical-Conservative
Q2	Self-sufficient-Group-dependent
Q3	Undisciplined-Controlled
Q4	Relaxed-Tense

The 16 PF Inventory consists of 187 multiple-choice items. The subject has to choose one option. There is no right or wrong answer to the statements.

➤ **Vineland Social Maturity Scale**

Social maturity deals with learning to properly relate to acquaintances, friends and intimate relationships. It also involves understanding how to honor and respect those in authority; civil, parental, employer or spiritual. It is an indicator of the *life skills* a person possess for various situations. The World Health Organisation defines *life skills* as “abilities for adaptive and positive behaviour that enable individuals to deal effectively with the demands and challenges of everyday life.” In primary and secondary education, *life skills* may refer to a skill set that accommodates more specific needs of modern industrialized life; examples include, food preparation, hygiene, basic literacy and numeracy skills. These skills are a basic requirement for a happy and successful life. The teens and children are specifically checked for these skills for their better future in their personal and professional life. The level of social maturity also gives an indication of the dark aspects of parenting and schooling where some more sincere efforts are required from parents and teachers. The Vineland Social Maturity Scale was developed by the American psychologist Edger Arnold Doll. The test measures communication skills, general self help ability, locomotion skills, occupation skills, self direction, self help eating, self help dressing, socialization skills.

The test is administered during an interview of the child with a parent or other person familiar with the person being assessed. It measures social competence, self-help skills, and adaptive behavior from infancy to adulthood. It is used in planning for therapy and/or individualized instruction for persons with mental retardation or emotional disorders. The Vineland scale, which can be used from birth up to the age of 15, consists of a 89-items for interview with a parent or

other primary caregiver. Personal and social skills are evaluated in the following areas: daily living skills (general self-help, eating, dressing); communication (listening, speaking, writing); motor skills (fine and gross, including locomotion); socialization (interpersonal relationships, play and leisure, and coping skills); occupational skills; and self-direction. The test is un-timed and takes 20-30 minutes. Raw scores are converted to an age equivalent score (expressed as social age) and a social quotient (SQ):

$$SQ = \frac{SA}{CA} \times 100$$

SA= Social Age; CA= Chronological Age or Actual Age, SQ= Social Quotient.

The test was adapted in Indian conditions by Dr A J Malin during his work at Nagpur guidance and Counselling centre.

➤ Family Pathology Scale

The family is a primary social unit of every culture. In India, the family rather than the individual has been considered as the unit of social system. The Indian family reflects the socio-cultural fabric of Indian society, its philosophy and values (Sethi, 1989). The relationships within the family are complex, of varying degrees of intensity and myriad in nature. The emotional tone, which governs the relationship between any two persons, is continuously influences in its course by emotional relationship of all others in the family.

The family pathology scale indicates the extent to which maladaptive behavior is present amongst the family members in their interaction with each other that is between spouses and between parents and children. A total of 100 items were prepared in the form of statements which had to be rated on a 3 point scale, with 1 indicating ‘low/ no family pathology’ (‘Never’ response), 2 indicating ‘average family pathology’ (‘occasional’ response) and 3 indicating ‘high family pathology’ (most often response). This scale consisting of 100 items was distributed to 25 clinical psychologists and 25 psychiatrists. The judges were asked to indicate as to what extent each item was indicative of family pathology on a three point scale, that is, “highly indicative”, “somewhat indicative”, and not at all indicative”. Using the internal consistency method, only those items were chosen on which the rating was the same amongst all the 50 experts. Secondly the items, which were given a rating of 1 indicating poor family pathology, differed by two points from the item that was chosen as indicative of high family pathology. Only those items were selected and included in the final scale for family pathology, which met the above two criteria. Thus, there are 42 items in the scale to be responded by the subject with ‘most often’, ‘occasionally’ and ‘never’. These were then administered to a group of 300 married couples from the normal population, (N= 600) and 100 couples from the psychiatric (pathological) population (N=200) and the reliability and validity were worked out.

➤ Sociometry

The word *sociometry* (coined by Jacob Levy Moreno, 1953) comes from the Latin “*socius*,” meaning social and the Latin “*metrum*,” meaning measure. The words therefore mean that sociometry is a way of measuring the degree of relatedness among people. Measuring the degree of relatedness or affiliation can not only help in evaluating the degree of cohesiveness amongst the members of the group, work teams, class or organisations, it may also help in bringing about positive change and required interventions. Sociometry also serves as a powerful tool in lessening

the communication gap and reducing conflict by helping the group to analyse, examine and evaluate its own dynamics. It can also be helpful in finding out the relevant areas or group that requires therapy or training. It is a measure which helps in evaluating how individuals associate with each other when acting as a group toward a specified end or goal (Criswell in Moreno, 1960, p. 140). Moreno himself defined sociometry as “the mathematical study of psychological properties of populations, the experimental technique of and the results obtained by application of quantitative methods” (Moreno, 1953, pp. 15-16).

Sociometry can be used as a scale, with the help of which choices in forming interpersonal relationships of people can be studied. It is a technique of measurement in which at least (minimum) a group consisting of 5-6 members are asked to select or choose members of the same group based on a specific criteria, as for example everyone in the group can make choices and describe why the choices were made. From these choices a description emerges of the networks inside the group. With the help of these choices or preferences a drawing, like a map, of those networks called a *sociogram* is developed. The data for the sociogram may also be displayed as a table or matrix of each person’s choices. Such a table is called a *sociometric matrix*. It is also important to understand the concepts of sociometric star, mutuals, cliques/ chains, isolates, sociometric matrix, and sociogram, they are explained as follows:

- 1) **Sociometric star:** Regardless of the criterion, the person whose name is selected by maximum members of the group is known as the *sociometric star* for that specific criterion.
- 2) **Mutuals:** where two people choose each other
- 3) **Chains or cliques:** where person A chooses person B who chooses person C who chooses person D and so on
- 4) **Isolates:** the person who has not been chosen by any one within the group
- 5) **Sociogram:** With the help of the choices or preferences a drawing, like a map, of those networks called a *sociogram* is developed.
- 6) **Sociometric matrix:** The data for the sociogram may also be displayed as a table or matrix of each person’s choices. Such a table is called a *sociomatrix*

The above concepts can be clearly understood with the help of an example. Let us assume that there is group of six members, namely, ‘A’, ‘B’, ‘C’, ‘D’, ‘E’ & ‘F’. Each member will be asked to give their choices for a set of questions. The questions asked may be as follows:

- 1) Whom do you trust amongst the members of your group?
- 2) Whose advice would you like to take regarding serious matters of your life?
- 3) Who do you think can transmit messages accurately within your group?
- 4) Who would like to work with?
- 5) Who would you like to spend your leisure time with?
- 6) Who would you like to seek help from to generate creative ideas for your task?

The only requirement is that, the members are required to choose only one person for each question.

The sociometric matrix chart, sociogram, star, mutuals, isolates and cliques will be different for each question. Suppose the members have given their responses for the first (question no.-i) question. Let us say the members have marked a '+' to indicate "High Trust", "M" to indicate "Moderate Trust", and "-" to indicate "Distrust/Conflict". Say for example, the member 'A' has been asked the question first and the following is his rating:

B	+
C	-
D	M
E	M
F	+

This means that for the above question, 'A' highly trusts 'B', distrusts or is in conflict with 'C', has moderate trust on 'D', has moderate trust on 'E' and has high level of trust for 'F'. After obtaining the responses from everyone for the first question (question no.-i), the next step is to prepare a sociomatrix from all the received responses which may be as following for the above example:

Sociometric Chart for the question no.- 1

	'A'	'B'	'C'	'D'	'E'	'F'
'A'	-----	M	+	M	+	M
'B'	+	-----	+	+	+	+
'C'	-	M	-----	-	-	-
'D'	M	M	+	-----	M	+
'E'	M	M	+	+	-----	+
'F'	+	+	M	+	M	-----

In the above figure, the first column shows the choice based ratings of 'A' for the other group members, the second row shows the ratings of 'B', third row is of 'C' and so on. The matrix clearly represents the extent to which the interpersonal relationships amongst the members of the group. The row which has a large number of '+' can be identified as the informal leader(s) of the group (member 'B' can be said to be an informal leader in the above example). Rows showing '-'s can identify those people the group may be close to rejecting (member 'C' can be said to be as rejected or least trusted member in the above example). Columns showing all M's or all +'s may highlight those members who have a fear that their responses may be disclosed to others and therefore give moderate responses.

Another important pattern to look for is what is called mutuals. A mutual occurs when I rate you at the same level as you rate me. A positive mutual is when we both rate each other +; a negative mutual is when we both rate each other -. Positive mutuals show bonding in a group. Negative mutuals show areas of conflict. The identification of negative mutuals gives the consultant or therapist insight as to where to start to repair a dysfunctional group. Here are the column totals, and *mutuals* for our sample group:

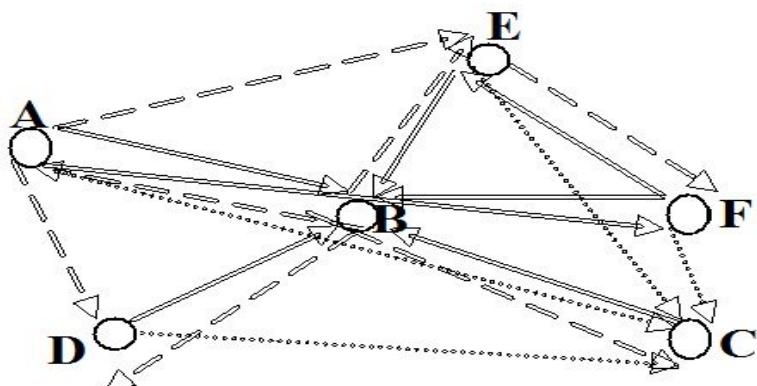
Mutuals for the question no.- 1

	'A'	'B'	'C'	'D'	'E'	'F'
Total '+'	2	5	0	2	3	3
Total 'M'	3	0	1	3	2	2
Total '-'	0	0	4	0	0	0
Total choices received	5	5	5	5	5	5
No choices received	0	0	0	0	0	0
MUTUALS:						
Mutual '+'	0	1	0	1	0	2
Mutual 'M'	1	0	0	1	0	0
Mutual '-'	0	0	0	0	0	0

The sociometric thus highlights that, the member 'C' requires to work more upon its interpersonal relationship with the other members in order to bring a better team effort. Similarly, the data of a sociomatrix can also be represented in a graphical form (called "sociogram"). The persons are represented in the form of small circles or bubbles. Say, if you are to prepare a sociogram for the above example, where the arrow indicates "high trust", the arrow indicates "moderate level of trust" and the arrow - - - - indicates distrust or "conflict".

Since, all the members have high trust for the person 'B', he is at the center as a sociometric star and the relationship of each member with each other has been indicated simultaneously. If there would have been an isolate in the above example, then no arrow would have been drawn for the concerned person.

Sociogram for question no. 1



The learners are required to prepare and work out the sociometric, sociogram, sociometric star, mutuals, cliques and isolates for all the rest of criterion based responses in a similar pattern

The following instructions should be given, "The following are some of the questions, on the basis of which you have to prepare a sociometric chart, sociogram and then you are required to find out the sociometric star, isolates, mutuals, and cliques for each of the following criteria You have to select only one person for each mentioned question". Some of the questions are given below:

Whom in this room would you choose...

- 1) for advice on the best suited mobile phone for you?
- 2) to generate creative ideas for your tasks?
- 3) for support in taking risks?
- 4) to transmit messages accurately?
- 5) for help in dealing with a difficult situations?
- 6) to work with you?
- 7) to get reliable information on top management decisions?
- 8) to keep a confidence?
- 9) who would recognize your effort and your job?
- 10) who has shown the most growth in the past year?

On the basis of the responses of each member in the group, the learner has to find out the star, isolates, mutuals and cliques. He/ she has to then prepare a sociometric chart and sociogram.

➤ Problem Behaviour Checklist

The problem behavior checklist was devised to identify the emotional and conduct problems of children. A total of 100 items were prepared in the form of symptoms which had to be rated on a three point scale, with 1,2, and 3 indicative of ‘no’, ‘average’ and ‘high’ problem behavior. As per ICD-10, specific diagnostic criteria were included separately for emotional, conduct and mixed disorders of conduct and emotions. These 100 items were given to 25 psychologists and 25 psychiatrists. Using the internal consistency method, only those items were chosen on which the rating was the same amongst all the 50 experts. Using this principle, 58 items were selected from a total of 100 items. Thus, there are 58 items in the scale to be responded by the parents with ‘most often’, ‘occasionally’ and ‘never’. These were then administered to a group of 300 married couples from the normal population, (N= 600) and 100 couples from psychiatric (pathological) population (N=200) and the reliability and validity were worked out.

➤ Span of Attention Experiment

Attention is the cognitive process of selectively concentrating on one aspect of the environment while ignoring other things. Attention has also been referred to as the allocation of processing resources.

When the nature of various stimulus items presented randomly is the same, the maximum number of items or objects grasped by a person is called his span of attention. As gestalt psychologist have shown human minds tends to take things as a whole. Where it fails to apprehend the whole, it goes to parts rather smaller wholes. When we come across a word PSYCHOLOGY we usually have a glance of this letter grouping plus few initial letters and read the word. It is interesting to note that if any letter in the middle, say “o” is missing, still the word is correctly perceived. This overlooking of typographical errors is called proof reader’s illusion.

Attention plays a important role in perception, cognition, and action, influencing the choices an individual make. The study of attention has been of interest to the field of psychology since its earliest days.

Wilhelm Wundt was one of the main persons to contribute to the study of attention. The relationship between attention and perception is one of the first topics to be studied in experimental psychology. Wundt held that attention was an inner activity that caused ideas to be present to differing degrees in consciousness. Wundt suggested that the focus of attention could narrow or widen. During late 19th century, Hermann von Helmholtz (1821-1894) argued that attention is necessary for visual perception. Using himself as a subject and pages of briefly visible printed letters as stimuli, he found that attention could be directed in advance of the stimulus presentation to a particular region of the page, even though the eyes were kept fixed at a central point. He also found that attention was limited. William James's in his book on Principles of Psychology (1980) described as taking possession by the mind, in clear and vivid form, of one of what seem several simultaneously possible objects or trains of thought.

Any experiment based on span of attention, using tachistoscope, can be conducted by the learners.

➤ **Memory Experiment**

Memory is an ability to store, retain, and recall information and experiences. In other words, it is also explained as the process of encoding, storage and retrieval of information. Encoding refers to transformation of information in form of codes Storage is the process of putting the coded information in to the memory and retrieval is the process of gaining access to the coded, stored information. There are three types of memory based on the process of collecting and storage of information, they are discussed as follows:

- **Sensory memory:** We receive several information from our environment through different sense organs (for example, visual, auditory etc.) at a particular time. For instance, while you are listening to the instructor, you are also looking at the instructor at the same time. We pay attention to some information and reject others. The duration of information held here is for few seconds.
- **Short term memory-** Once we pay attention to the selected information it is passed on to the short term memory. At this juncture the information received through sensory memory is held up to 30 seconds. The best example of this memory is the ‘serial position effect’. If subjects are said to listen to certain words and then recall them instantly, it has been found that the subjects will recall those items which appeared at the end (which is known as *recency effect*) and the beginning (which is known as *primacy effect*) of the list, the items encountered most recently are remembered well.
- **Long term memory-** Some of the information reaching short term memory is processed by being rehearsed, that is, by having attention focused on it, perhaps by constantly repeating the words. The duration of information stored in long term memory can be for life time. The information processed and stored here is systematically organised.

In 1885, Ebbinghaus found that the effects of memory can be seen more pragmatically with the help of nonsense syllables (i.e., meaning less words like- mus, duv, tun). He found that if the subjects are given to memorize a list of given words, and then asked to recall them after a certain time period, the subjects could recall non sense syllables more effectively and quickly in comparison to the meaningful words. He was later on criticized by Bartlett (1932) who said that it is not only the non sense syllables, but the cognition, social and experimental environment which equally effects memory, so these aspects should also be taken care of while measuring memory. Several ways of measuring memory were developed later on. Today, one of the classic

techniques of measuring memory is the experiments done with the help of memory drum. Memory drum is an apparatus which is cylindrical in shape and can be rotated clock wise. It is basically a mechanical device for the serial presentation of syllables or words for regulated periods and at regulated intervals.

Any experiment based on memory, using memory drum, can be conducted by the learners.

7.0 CONDUCTION OF TERM END EXAMINATION IN MPCL 007

Duration: 3 hours

Conduction of the examination: The examination has to be conducted in the respective study centres by the Regional Centres. During the examination, the learner will conduct the practicals and submit the answer sheet.

The practical may be allotted to the learner by the way of lot system. Chits with names of various practicals may be prepared before hand and the learner may be asked to pick one at the time of the examination. S/he may then collect the test/ experiment material and start conducting the practical. S/he will have to bring one subject along with her/him. Once the learner finishes conducting the practical, s/he will have to report the findings in the answer sheet. The answer sheet is then to be submitted to the internal examiner. This will be followed by the viva voce.

Viva voce will be conducted by both the internal examiner and the external examiner.

APPENDIX

CERTIFICATE



This is to certify that Ms/ Mr. _____

of MA Psychology First Year has conducted and successfully completed the practical work in MPCL- 007 Practicum: Experimental Psychology and Psychological Testing.

Signature of the Learner

Name:

Enrolment No.:

Name of the Study Centre:

Regional Centre:

Place:

Date:

Signature of Academic Counsellor

Name:

Designation:

Place:

Date: