UNIT 3  PSYCHOLOGICAL ASSESSMENT AND TESTING PROCEDURE: INDUSTRIAL AND ORGANISATIONAL TESTING

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INTRODUCTION

Psychological assessment is the appropriate understanding of the psychological attributes or characteristics of an individual or group of individuals using objective techniques of measurement. Psychological tests are measuring devices that are used to assess a sample of behaviour objectively, consistently and systematically. Industrial and organisational psychology is the field of psychology that applies psychological principles to work related issues. There are a variety of assessment techniques. They range from unstructured interview to structured psychological test. The main goal of these techniques is to predict job performance. Each technique has its own relative strengths and weaknesses in this regard. The unit 1 starts with assessment techniques and puts forward the important characteristics of psychological tests. The unit then presents the purposes of psychological tests and the manner in which the psychological tests are classified. The various dimensions that are being tapped by psychological tests are then taken up and finally the advantages and disadvantages of psychological tests are discussed.

OBJECTIVES

After reading this unit, you will be able to:

- Define psychological assessment;
- Describe the characteristic features of psychological tests;
- Explain the purposes of psychological tests;
- Classify the psychological tests on certain criteria;
- Present the various psychological tests; and
- Analyse the advantages and disadvantages of the tests.

INTERVIEW AS ASSESSMENT TECHNIQUES

A very commonly employed selection technique is a job interview. Job interview can be unstructured or structured. Let us see what is unstructured interview and then consider the structured interview.

i) Unstructured Interview: In an unstructured interview, the interviewer engages in dialogue with the interviewee that does not follow a predetermined format, questions may vary from applicant to applicant, and there is usually no standardised scoring method. Consequently, validating this technique as a job performance predictor is quite difficult (e.g., one applicant may have the opportunity to respond favourably to a question that was not asked of another or vice versa).

ii) Structured Interview: In contrast, through a structured interview all applicants are judged on responses to the same questions asked in the same format. Structured interviews provide for reliable and consistent scoring results. Also, if interviews are conducted by a panel of interviewers their predictive value increases. Basic weaknesses of interviews are:

1) Failure of interviewers to agree,
2) Failure to interviews to predict job success,
3) Pressure of interview situation,
4) Interviewers’ subjective standards of comparison, and
5) Interviewers’ prejudices.

iii) **Situational Interview**: Again a different type of interview, the *situational interview*, is developed specifically to meet the needs of a particular job. The interview questions are not designed to inquire into general characteristic, traits, or abilities, but rather into the actual behaviours needed for the job in question. The job behaviours are determined by a systematic job analysis conducted by the critical-incidents technique.

In developing the situational interview the primary step is to prepare a list of critical incidents that differentiate between current successful and unsuccessful employees. These incidents are written by supervisors who have comprehensive knowledge of the job. The supervisors determine *benchmarks* for scoring the critical incidents. Because of the use of the benchmarks developed by persons who have detailed knowledge of the job, the scoring of the situational interview is objective and has been observed to be most valid interview for job success (Schultz & Schultz, 1990).

### 3.3 Psychological Tests and Its Characteristics

Well-developed and soundly researched psychological tests must meet and satisfy the following characteristics, namely, Standardisation, Objectivity, Reliability, Validity, Norms etc.

#### 3.3.1 Standardisation

It refers to the consistency or uniformity of the conditions and procedures for administering a test. If we want to make a comparative evaluation of the performances of many individuals on the same test, it is obvious that they all take that test under identical circumstances. Any change in testing procedure may produce a change in individual performance on the test.

#### 3.3.2 Objectivity

It refers primarily to the scoring of the test result for a test to be scored objectively, it is necessary that anyone scoring the test be able to obtain the same results.

#### 3.3.3 Reliability

It refers to the consistency of response on a test and can be determined in three ways: the *test-retest method* (which involves administering a test twice to the same group of individuals and the correlating the two sets of scores); the *equivalent or parallel forms method* (it uses the test-retest approach but instead of taking the same test a similar form of the test is given and the two sets of scores are correlated) and the third approach is the split-half method (here the test is taken once, divided in half and the corresponding two sets of scores are correlated with each other). Whatever method is used the reliability coefficient should exceed atleast +0.70.

#### 3.3.4 Validity

The most important requirement in evaluating any psychological test is that it measures accurately what it is intended to measure. This is technically called as validity. Personnel psychologists are concerned with the approaches to criterion related validity, i.e., *predictive validity* (how well the test scores predict the future job success) and
concurrent validity (how well the test scores speak about the present status of the job performance).

However, another approach is the rational validity which focuses mainly on the nature of the test itself, its structure and content. This validity is established by either construct validity or content validity. Validity coefficients (the correlation between test scores and performance) around +0.30 to +0.40 may be considered acceptable.

Tests are no longer considered to be differentially valid. Researchers are investigating the concept of validity generalisation. A test valid for one job will be valid for other jobs. Therefore, tests may no longer need to be validated every time they are applied to a different job or company. Furthermore the Equal Employment Opportunity Commission (EEOC) in various countries has prescribed the kinds of validation studies that must be conducted on all tests used for selection to ensure that they are measuring characteristics that are clearly related to the job in question but certainly not discriminate applicants because of their race, religion, sex or national origin.

3.3.5 Norms

To interpret the results of a psychological test, a frame of reference or point of comparison must exist so that the performance of one individual can be compared with the performance of other, similar individuals. This is obtained from test norms, that refers specifically to the average or typical performance of a large group of people similar in nature being tested.

Self Assessment Questions

1) Why is psychological testing necessary for I/O psychology?
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2) Explain unstructured and structured interview.
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3) Define the following:
   a) Reliability   b) Validity   c) Norms
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3.4 PURPOSES OF PSYCHOLOGICAL TESTS

By and large, psychological tests serve two purposes: (i) Selection and (ii) Placement. Both functions involve making a prediction about an individual’s future behaviour or
performance and for that the same kinds of tests are used for both purposes while the difference lies in how the results are applied. Let us first take up selection purpose and see the importance of psychological tests here.

3.4.1 Selection

It is concerned with determining what kind of person is suitable for a particular job; the emphasis is on the job itself and to select from among many applicants the ones who will succeed on that job. The test scores obtained by the individual candidate clearly gives the suitability of the person for the concerned job.

3.4.2 Placement

Here the emphasis is on the individual. The problem is to find the right kind of job for a particular person. This process is generally aided by a vocational or guidance counsellor who attempts to diagnose an individual’s capabilities to suggest the work in which he or she is most likely to accomplish success.

3.5 ESTABLISHING AN ASSESSMENT OR TESTING PROCEDURE FOR INDUSTRIAL / ORGANISATIONAL SETTING

The fundamental steps in setting up a testing procedure are basically similar as those necessary for any kind of selection procedure for the requirement of an industry or organisation. The primary step is to understand the nature or characteristics of the job for which psychological testing is to be used as a selection device. When job and worker analyses have been performed, the appropriate test or set of tests to assess the behaviours and abilities required for success on the job must be very carefully chosen or developed. This is a critical point.

No matter how exhaustively a job has been carefully analysed, if a poor test is subsequently utilised, the selection procedure is turned into a futile one. Hence, only properly trained and qualified psychologists who are well conversant in selection issues can set up the needed worthwhile selection procedure, especially ones which involve the use of psychological tests.

Now, the problem is, where do psychologists find suitable psychological tests. They can either use tests already available in the market or can develop new tests specially serving for the needs of the concerned job and the organisation, as well.

During looking for a published test(s) to use, the psychologists know precisely for what tests to look for and where to get the same from. The best or efficient tests provide information on reliability and validity and make test norms available for public evaluation. Again, there are significant sources of information on the nature and statistical characteristics of psychological tests.

The major source of information is the comprehensive and periodically revised Mental Measurements Yearbook. This efficient handbook contains critical reviews and evaluations of over 1500 tests (Mitchell, 1985). In India we have “Survey of Psychological Tests” brought out by the Indian Council of Social Science Research.

Over and above, *Psychological Abstracts* publishes information on psychological literatures involving reports of validity studies conducted on various tests. Apart from these, in 1988, the *Test Validity Yearbook Organisational* began publication, focusing on criterion-related validity studies.

Efficient psychologists possess expertise in regard to how to evaluate the information obtained and, thus, can learn much about the relevant tests being considered for selection purposes. An effective choice among tests can only be made on the basis of comprehensive knowledge often pertinent materials.

A host of important factors should be taken into serious account while taking decision as to whether to develop a new test or to use one available in the market. In this regard, certainly cost involvement is primarily an important consideration. It is relatively less expensive to purchase an available test than to develop a new one, especially when a small number of workers are to be selected.

In addition, time is also an important factor. The organisation / industry may require workers as quickly as possible and may express their unwillingness or inability to wait for a new and useful test to be developed. In fact, a large scale testing procedure may require couple of months’ investigation before the test can be used for selection purpose, but an already published test can be used readily, assuring it serves efficiently the specific needs of the job in question.

However, there are certain situations in which existing tests are not sufficient and effective for the same. For example, if the job is entirely a novel one, it may require new skills such as those needed to operate sophisticated and complex equipment. It is unlikely that an existing test will be able to measure the abilities needed for success in a new kind of work. Herein lies the necessity for developing a new test.

When an organisation decides to develop its own test for a particular job, the personnel psychologist must write or compile a list of suitable items or questions (centering around several logically or intellectually defined enquiry areas or constructs constituting the operational definition of the concerned attribute). Next, the psychologist proceeds to examine and evaluate critically each item in the test, conducting an *item analysis* to determine how effectively each item *discriminates* between those who scored high on the total test and those who scored low.

In essence this involves correlating a person’s response on each item with the response on the test as a whole. Such *discrimination index* may be determined by applying a suitable psychometric technique – quite a number of such standard techniques are available.

The *level of difficulty* of each item / question must also be determined. If the majority of the test items are too easy, most people will obtain high scores. As a result, the obtain narrow range of scores makes it difficult to determine efficiently and effectively between those who are very high on the characteristic or ability being tested and those who are moderately high.

A test on which most of the items are too difficult presents the reverse problem. It would be difficult to distinguish between those who possess extremely low ability and those who possess only moderately low ability. Hence, those items which are extremely difficult (virtually impossible to answer by the individuals of the target group) and those which are very easy (almost all individuals of the group could answer the items correctly) are desirably to be excluded from the concerned test.
In addition, reliability and validity of the test should also be assessed by applying the suitable techniques, as mentioned earlier, under 3.2.3 and 3.2.4.

Once validity and reliability of a test have been found to be satisfactory, the problem of setting a cutoff score (the score below which an applicant will not be hired) must be resolved. There are a number of psychometric techniques for establishing cutoff scores, most of which involve job analysis and criterion-related validity studies involving a minimally acceptable level of job performance. In setting cutoff scores, it has been observed that better workers are not those who score much high.

As for example, quite intelligent people often do not work well in routine assembly line jobs. It may be necessary, therefore, that both minimum and maximum cutoff scores be determined for an intelligence test that is a part of this kind of organisation’s selection procedure. Hence, the applicants must be intelligent enough to be able to learn the job but not so intelligent that they will be bored with it.

Hence, in the perspective of such a cluster of salient aspects of testing procedure the need for well-trained test administrators is the essential prerequisite. The task requires considerable technical skill coupled with sympathetic understanding of, and interest in, those being tested.

### 3.6 Classification of Psychological Tests

Psychological tests can be classified by the ways in which (1) they are constructed, scored and administered and (2) in terms of behaviour or the characteristics they are designed to assess. Let us deal with these one by one.

#### 3.6.1 Test Administration Perspective

Many tests are designed in such a way that they can be administered to a large number of people at the same time. These *group tests* are advantageous in a situation that requires the testing of many people, i.e., large-scale testing programme in industry, the only limitation of which is the size of the testing facility.

Individual tests, administered to one person at a time, are costlier and therefore, are used to a lesser degree in Industry than are group tests. These tests are used more frequently for vocational guidance and counselling as well as for clinical and diagnostic work with emotionally disturbed persons.

#### 3.6.2 Computer Assisted Testing

Designed for large scale group testing or computer assisted testing is nevertheless an individual testing situation in which the person taking the test interacts with a computer. The questions appear one at a time on the computer screen and the job applicant presses a key corresponding to an answer selected. Computerised test is more efficient and less costly, and it provides standardised reports. Computers also eliminate all personal biases and errors of interpretation and are unaffected by feelings of fatigue, boredom or burnout.

#### 3.6.3 Speed and Power Tests

A speed test has a fixed time limit at which point everyone taking the test must stop. A power test has no time limit and the subjects are allowed as much time as they feel they need to finish the test. By and large, a speed test consists of a set of items having more or less uniform level of difficulty while a power test contains more
difficult items and the set of its constituent items are arranged in an increasing order of difficulty.

### 3.6.4 Paper and Pencil Tests

Paper-and-Pencil tests are the type with which we are most familiar. The items or the questions are in printed form and the answers (generally in several alternative forms) are pointed on a separate answer sheet. Majority of the standard group tests of intelligence, interest, personality are paper-and-pencil tests.

Again some behaviours or characteristics do not lend themselves to evaluation by paper-and-pencil forms. As for example, mechanical ability, can be assessed better by providing the applicants to perform a series of mechanical operations than by answering questions about the nature of those operations.

Other examples are the assessment of typing ability by observing the typist in operation. Similarly, the evaluation of more complex skills, expensive equipment may be required. Such tests are Performance tests that may require mostly in individual testing situation.

### 3.6.5 Objective and Subjective Scoring

Majority of the psychological tests used in assessing persons performances in industrial/organisational settings are objectively scored for evaluation.

Subjectivity in test scoring as interviewing allows personal prejudices and attitudes to enter into the assessment situation which can lead to distortion of the evaluation.

### 3.6.6 Characteristics Perspective

Psychological tests may, however, be most usefully classified in terms of characteristics or behaviours they are designed to assess. The most basic types are tests of cognitive or mental ability, aptitude, motor ability, interest and personality.

### 3.7 COGNITIVE ABILITY

Cognitive ability tests measure a person’s skills needed for a new job or to cope with the demands of a training course. These tests are not the same thing as tests of achievement or tests of attainment. Tests of attainment assess specifically what people have learnt, e.g., typing skills.

Several tests of cognitive ability (generally known as intelligence tests) are used frequently in employee selection. An important survey on industrial selection (Cooper & Robertson, 1988) found that about 80% of cognitive ability tests are used effectively for the said purpose. Group intelligence tests, the kind used most often are primarily a rough screening device. The tests are short, take little time to complete, and can be administered to large groups. These can be rapidly and easily scored by even a clerical staff or a machine.

Personal psychologists have found that tests of cognitive ability are highly valid for predicting success in training programmes as well as actual job performance (Guion & Gibson, 1988). Indeed such tests are the “most valid way known of identifying the employees or trainees who will be the most productive workers” (Hawk, 1986).

#### 3.7.1 The Otis Self-administering Tests of Mental Ability

This is a frequently used selection test, which has proven to be useful for screening applicants for a wide variety of jobs, including office clerks, assembly-line workers,
and lower level supervisors, that is, jobs not requiring an extremely high level of intelligence. The test is group administered and takes little time to complete. It is less useful for professional or high-level supervisory positions because it does not discriminate well at the upper ranges of intelligence.

3.7.2 The Wonderlic Personnel Test

This is a 50-item version of one of the Otis series of tests, is particularly popular in industrial selection because it takes a mere 12 minutes to complete, making it an economical screening device. This group test includes verbal, numerical, and spatial content items and has been useful in predicting success in certain lower level clerical jobs.

3.7.3 The Wechsler Adult Intelligence Scale-Revised (WAIS-R)

This is a lengthy, individually administered test that is used in industry primarily for the selection of senior management personnel. The administration, scoring and interpretation of the WAIS require much training and experience on the part of the examiner. The test involves 11 subtests in two sections, verbal and performance. The verbal subtests are Information, Comprehension, Arithmetic, Similarities, Digit Span, and Vocabulary; the performance subtests are Digit Symbol, Picture Completion, Block Design, Picture Arrangement, and Object Assembly. Two separate measures of intelligence, therefore, can be obtained as well as a full-scale IQ score by combining the verbal and performance measures. Computer-assisted interpretation is available.

3.7.4 The Raven’s Progressive Matrices (RPM)

This is a non-verbal intelligence test requiring interactive reasoning about abstract geometric patterns. This was first published in 1938 and later revised several times and is designed to cover a very wide range of mental ability and to be useable with subjects irrespective of age, sex, nationality, or education.

The respondent is provided with 60 abstract geometric patterns with a missing part. In each case the subject must select from several alternatives the one that fits in a missing part of the pattern. Some psychologists believe that it provides the purest available measure of general intelligence, uncontaminated by cultural and educational influences. English Psychologist John C. Raven (1902-1970) developed this test in 1938. The R.P.M. is available in three forms, differing in level of difficulty. The Standard Progressive Matrices (SPM-1996 Edition) is the form suitable for average individuals between the ages 6 and 80 years (Fig. page 43).

An easier form, the Coloured Progressive Matrices (CPM-1990 Edition), is available for younger children and for special groups who cannot be adequately tested with the SPM for various reasons.

A third form, the Advanced Progressive Matrices (APM-1994 Edition) was developed for above-average adolescents and adults.
3.8 APTITUDE TESTS

Aptitude tests must be designed for many jobs especially to assess the skills required by that job, but there are published tests that measure general aptitudes for mechanical and clerical skills.

A couple of tests measure clerical aptitude having potentials in the prediction of success for clerical workers. These tests are concerned mainly with speed and accuracy of perception.

The Minnesota Clerical Test is a group tests consisting of two parts, number comparison and name comparison. The test is a speed test to determine the individual’s accuracy when working in a limited time period. The test instructions urge the examinees to work as fast as they can without errors. The number comparison consists of 200 pairs of numbers, each of which contains 3 to 12 digits. The name comparison section is similar but uses proper names instead of numbers. These tasks are analogous to the work required in clerical jobs.

The General Clerical Test is a group speed test published in two booklets. A—Clerical, Numerical and B—Verbal.

**Booklet A** contains items on checking, alphabetizing, numerical computation, error location, and arithmetic reasoning and is suitable for testing job applicants for accounting or payroll clerk positions.

**Booklet B** contains items on spelling, reading, comprehension, vocabulary, and grammar and is suitable for applicants for secretarial jobs.

Tests to assess mechanical aptitude emphasise on the abilities of mechanical comprehension and spatial visualisation.

The Revised Minnesota Paper Form Board Test is a measure of spatial relations or visualisation and the manipulation of objects in space, necessary abilities for occupations such as drafting. The applicant is presented with drawings of figures cut into two or more segments and must be able to picture how the total figure would appear if the pieces were put together. Sample items from this test are shown in Figure below.
Fig. 5: Sample items from Revised Minnesota Paper Form Board Test. The subject must pick the figure (from A to E) that shows how the parts will look when assembled (Source: The Psychological Corporation)

Investigation conducted with this test has exhibited some degree of validity in predicting successful performance in mechanical work, engineering shop-work, and power sewing machine operation as well as classroom performance of art and dentistry students.

Another widely used test of mechanical aptitude, in both the military and private industry, is the Bennett Mechanical Comprehension Test. This test employs pictures with questions about the mechanical principles involved in them and provides norms for various levels of training and background. Sample items are shown in Figure below. Both written and tape-recorded instructions are available, the latter for use with applicants who have difficulty reading. Both forms are available in English.

Fig. 6: Sample Items from the Bennett Mechanical Comprehension Test. Answers are recorded on a separate answer sheet (Source: The Psychological Corporation)
The *Minnesota Rate of Manipulation Test* has two parts. The examinee’s task in the first part is to place 60 cylindrical blocks in 60 wells in a board. The second task is to turn all the blocks over. The score is the amount of time taken to complete each task.

Fig. 7: Sample items from MacQuarrie Test for Mechanical Ability by T.W. MacQuarrie *(Source The Psychological Corporation)*

There are other tests of motor ability that measure coordination. The most common ones utilise the pursuit rotor, a test in which the testee uses a stylus to follow a dot on a revolving disk.

One variation of this procedure is the *Purdue Hand Precision Test*. As an upper disk with a hole revolves, the person being tested must touch target holes in a plate underneath the disk by using a stylus. The score is kept electronically as the stylus activates a counter.

Again, in certain specific occasions, special devices are developed to assess motor skills sophisticated machines with the help of which the individual performs motor tasks of highly complex jobs as a result to visual signals. However, such tools are relatively more costly than the usual motor ability tests.

### 3.9 MOTOR ABILITY TESTS

A cluster of jobs in industrial and military organisations need a sufficient degree of motor skill involving muscular coordination, finger dexterity or a precise eye-hand coordination.

The *MacQuarrie Test for Mechanical Ability* is one of the few tests of motor ability in paper-and-pencil form. The seven subtests include:

- *Tracing*—a line is drawn through very small openings in a number of vertical lines.
- **Tapping**—dots are made on paper as quickly as possible.
- **Dotting**—dots are made in circles as quickly as possible.
- **Copying**—simple designs are copied.
- **Location**—specific points must be located in a smaller size version of a stimulus figure.
- **Blocks**—the number of blocks in a drawing must be determined.
- **Pursuit**—the visual tracing of assorted lines in a maze.

A few of these tasks are pictured in Figure below.

The *Purdue Pegboard* is a performance test that simulates conditions on an assembly line and measures finger dexterity as well as gross movement skills of fingers, hands, and arms. The task is to place pins in a series of holes as rapidly as possible, first with one hand, then the other, then both. Each of these tasks takes 30 seconds.

![Fig. 8: Crawford Small Parts Dexterity Test](image)

In addition, the *Purdue Pegboard* incorporates a 1-minute test involving the simultaneous use of both hands to assemble pins, collars, and washers in each hole.

The *O’Connor Finger Dexterity Test* and *O’Connor Tweezer Dexterity Test* assess how quickly an individual can insert pins into small holes, both by hand and by the use of tweezers. This is a standard measure of finger dexterity, and the test has proven to be useful in predicting success among sewing machine operator trainees, dentistry students, and a variety of other tasks requiring precise manipulative skills (Schultz & Schultz, 1990).

Several tests have been devised to measure speed, coordination, and other psychomotor skills. Majority are concerned with manual dexterity, but a few involve leg or foot movements that may be required in performing specific jobs. Some measure a combination of motor and perceptual, spatial, or mechanical aptitudes. The principal application of these tests has been in the selection of industrial and military personnel. Psychomotor tests are characteristically apparatus tests, although several paper-and-pencil adaptations have been designed for group administration.

An example of a published instrument requiring several simple manipulative skills is the Crawford Small Parts Dexterity Test (Crawford & Crawford, 1981), shown in Figure 8. In Part I of this test, the examinee uses tweezers to insert pins into close-fitting holes and then places a small collar over each pin. In Part II, small screws are placed in threaded holes and screwed down with a screwdriver. The score is the time required to complete each part (Anastasi, 1996).
Assessment of personality characteristics have been found to correlate with proficiency in many jobs. In addition, personality has had immense significance not only in job performance, but also in job satisfaction (Paunonen & Jackson, 1987).

There are two broad approaches to the assessment of personality characteristics. Self-report inventories and projective techniques.

### 3.10.1 Self Report Inventories

The self-report inventory involves various sets of items concerning specific circumstances, symptoms or feelings. Individuals are requested to point out how explicitly each item describes themselves or to what extent they agree with each of them.

However, self-report inventories are especially subject to malingering or faking. Most items on such inventories have one answer that may be identifiable as socially more desirable or acceptable than the others. On such test-items, the respondent may be motivated to “fake good” or select answers that create a favourable impression, as when applying for a job or seeking admission to an educational institution. Under other circumstances, he may be motivated to ‘fake bad” thus making himself or herself appear more psychologically disturbed than he or she is.

This may occur, for example, in the testing of persons on trial for a criminal offence. Several techniques have been adopted in the effort to meet the problem of faking of which the introduction of verification keys that detect faking is most useful.

Various well-known self-report inventories are available viz., Guilford-Zimmerman Temperament Survey, Minnesota Multiphasic Personality Inventory, Revised NEO Personality Inventory, etc. The Guildford-Zimmerman Temperament Survey is one of the more widely used paper-and-pencil personality inventories.

The items in the form of statements, are categorized into ten component independent personality traits: General activity, Restraint, Ascendance, Sociability, Emotional Stability, Objectivity, Friendliness, Thoughtfulness, Personal relations and Masculinity. The respondents check the statements by ‘yes’, ‘?’ and ‘no’ responses. In order to check against deliberate faking or carelessness in responding, the test has three falsification scales based on the answers to selected test items.

The *Minnesota Multiphasic Personality Inventory (MMPI)*, probably the best known and most significant of all the self-report inventories, consisting of 566 (originally 504, later 550) statements, including 16 that are repeated, to be classified by the respondent as ‘true’, ‘false’ or ‘cannot say’. This inventory provides 10 component scales (clinical) : Hypochondriasis (Hs), Depression (D), Conversion Hysteria (Hy), Psychopathic Deviate (Pd), Masculinity-Femininity (Mf), Paranoia (Pa), Psychoasthenia (Pt), Schizophrenia (Sc), Hypomania (Ma) and Social Introversion (Si). In addition there are four validity (test-taking attitude) scales : a score for the number of questions left unanswered (?); a Lie Scale (L) containing items describing socially desirable but unlikely behaviour, such as ‘I always tell the truth’ (True); an Infrequency Scale (F) of items answered in the keyed direction by 10 percent or less of normal people, such as ‘I see things, animals or people around me that others do not see’ (True); and a Correction factor (K) reflecting defensiveness in admitting to problems, containing items such as ‘At times I feel like swearing’ (False).
Numerous other scales have been derived from the MMPI test items. The MMPI was developed and first published in 1942 by US clinical psychologist S.R. Hathaway (1903-1984) and the US neuropsychiatrist J.C. McKinley (1891-1950); a revised version, called MMPI-2 was issued in 1989. Typical items are as follows:

- I cannot keep my mind on one thing.
- I used to keep a diary.
- I usually feel that life is worthwhile.
- Some people are so bossy that I feel like doing the opposite of what they request even though I know they are right.

The Revised NEO Personality Inventory (NEO PI-R) is a concise measure of the five major dimensions, or domains, of personality and some of the more important traits or facets that define each domain. The NEO PI-R allows a comprehensive assessment of personality. There are two versions of the NEO PI-R: Form S for self-reports and Form R for observer ratings, where each form consists of 240 items answerable along a 5-point scale.

The NEO PI-R supplants the NEO Personality Inventory (NEO-PI; Costa & McCrae, 1985). When it appeared in 1985, the NEO-PI had well-researched scales to measure the facets of Neuroticism (N), Extraversion (E), and Openness (O), but only global scales to measure the factors of Agreeableness (A) and Conscientiousness (C).

In 1989, several enhancements of the NEO-PI were offered to the user but the inventory itself remained unchanged. In NEO PI-R the three validity check items were also presented in the answer sheet. Apart from the utility in diagnosis and counseling the NEO PI-R is useful in industrial and organizational settings for various purposes (Costs & McCrae, 1992).

Many other self-report inventories are also available, most of them assess a variety of traits, and there are also psychological tests that can assess specific personality traits such as introversion-extroversion, sociability, emotional maturity, emotional security, etc.

In connection with the selection at the executive or managerial level self-report inventories are usually used in organizational or industrial settings.

### 3.11 PROJECTIVE TESTS

Although projective tests were developed primarily for their uses in clinical psychology with emotionally disturbed individuals yet their effective role to assess candidates for high-level executive positions is also undesirable.

The most well-known projective technique is the Rorschach inkblot test, which was first published by a Swiss psychiatrist—Hermann Rorschach in 1921. The test consists of 10 standardised inkblots — 5 of which are in colour and the rest 5 one in shaded of black and gray. As the examinee is shown each inkblot, he is asked to tell what he sees — what the blot could represent. Besides keeping a verbatim record of the responses to each card, the examiner notes time of responses, position or positions in which cards are held, spontaneous remarks, emotional expressions, and other incidental behaviour of the examinee during test sessions.
The process of interpreting the responses is complicated and is depending on whether the examinees reported seeing movement, human figures, inanimate or animate objects, and so on. The scoring is relatively subjective and depends on the training, skill and insight of the examiner. Of late, a few standardised procedures for administering, scoring and interpreting the results have been developed (Exner, 1986).

In contrast to inkblot techniques, the Thematic Apperception Test (TAT) presents more highly structured stimuli and requires more complex and meaningfully organised verbal responses. This test was developed by Henry Murray and his staff at the Harvard Psychological Clinic (Murray et al., 1938). The TAT materials consist of 19 cards containing vague pictures in black and white and one blank card.

The examinee is asked to make up a story to fit each picture, telling what led up to the event shown in the picture, describing what is happening at the moment and what the characteristics are feeling and thinking and giving the outcome. The stories are analysed in a subjective and unstandardised process. The TAT is also used primarily in clinical psychology but its uses in industrial selection purposes are also important.

Besides above there are other notable projective tests, viz., Rosenzweig Picture-Frustration Study, Sentence Completion Test, etc.

3.12 ASSESSMENT OF INTEREST

In industrial personnel selection, although interest inventories do not play a significant role (rather these tests are of immense significance in vocational guidance and career counseling) many organisations do include measures of interest as a part of their overall assessment programme. It is indeed a fact that in spite of possessing an intense degree of interest in a particular occupation it is no guarantee that an individual’s level of ability is quite compatible with the same. However, if the assessment provides that a person having no interest in a job, his or her successful performance in it is limited.

Two widely used interest inventories are the Strong—Campbell Interest Inventory (SCII) and the Kuder Occupational Interest Survey.

The SCII is a group-administered test composed of 325 questions that deal with occupations, school subjects, activities, leisure pursuits, and social contacts, some of which are to be ranked in order of preference and others rated as like, dislike, or indifferent. The SCII groups occupations in six areas: realistic, investigative, artistic, social, enterprising, and conventional. Scoring is done by computer.

The Kuder Occupational Interest Survey consists of a large number of items arranged in groups of three. Within each triad, examinees must indicate which activity they most prefer and which they least prefer. They are not allowed to skip any group if they do not like any of the alternatives or to check more than one as the most preferred activity. It can be scored for 126 occupations (Anastasi, 1976).

3.13 ADVANTAGES AND LIMITATIONS OF PSYCHOLOGICAL TESTING

The main advantage of using psychological test is not only an assessment technique in selection process but also some of its special types that can improve the said selection process. In addition, psychological tests also provide a good amount of valid information about an individual in a short period of time.
In terms of predictive value, tests of cognitive ability are valid predictors of performance on the job and in training programme for a variety of jobs in many settings.

### 3.13.1 Problems and Limitations of Psychological Testing

The problems of psychological testing include: (i) uncritical use, (ii) unfair rejection of applicants, (iii) faking of test resources, (iv) conformity and (v) poor quality of test administration. In recent years, people become more critical of tests and there are serious ethical issues involved in their use as selection devices, including invasion of privacy and the confidentiality of test questions and answers (Schultz & Schultz, 1990).

### 3.14 LET US SUM UP

Psychological assessment is the appropriate understanding of the psychological attributes or characteristics of an individual or group of individuals using standardised techniques of measurement having sufficient characteristics of reliability and validity. There are a variety of assessment techniques. They range from unstructured interview to structured psychological test. The main goal of these techniques is to predict job performance.

Generally, assessment techniques or psychological tests serve two major purposes in industrial and organisational settings:

1) **Selection**: Selection is concerned with determining what kind of person is suitable for a particular job.

2) **Placement**: Placement is concerned with determining what kind of job is suitable for a particular person.

Several steps are necessary to conduct a testing programme:

1) performing a job and worker analysis,

2) seeking or developing an appropriate test,

3) conducting item analysis of each question on the test,

4) determining the level of difficulty of each question,

5) assessing reliability and validity of the test, and

6) setting-up the cut off scores.

There may be variety of psychological tests in which they are constructed and administered or in terms of behaviour they measure, viz., individual or group tests, speed or power tests, paper-and-pencil tests or performance tests, computer assisted tests are examples of the former, and cognitive ability, motor ability, aptitude, interest and personality tests are the examples of the latter. Personality characteristics are measured by self-report inventories and projective techniques. Psychological tests are by far the best selection devices. There are however certain limitation of psychological testing, viz., uncritical use, unfair rejection of applicants, faking of test responses, conformity and poor test administration.

### 3.15 UNIT END QUESTIONS

1) Discuss interview as an assessment technique
2) What are the characteristic features of psychological tests?

3) Discuss the purposes of psychological tests

4) What are the requirements to be considered to establish testing procedure in industries?

5) How are psychological tests classified?

6) Discuss the various dimensions that are assessed by psychological tests.

### 3.16 GLOSSARY

**Psychological test** : Psychological test is an objective and standardised measure of a sample of behaviour.

**Standardisation** : Standardisation implies objectivity, reliability and validity of a measuring device or psychological test.

**Selection** : It is concerned with what kind of person is suitable for a particular job.

**Placement** : It is concerned with what kind of job is suitable for a particular person.

**Projective technique** : This is an approach to personality testing where a set of ambiguous stimulus such as ink blots are presented to an individual who will give some structure and meaning to this stimulus and thereby he will project his personal thoughts, desires, wishes and feelings.

### 3.17 SUGGESTED READINGS
