Psychological Assessment

Intelligence
• Robert Sternberg (1985) defined intelligence in terms of three characteristics:
  1. the possession of knowledge
  2. the ability to efficiently use knowledge to reason about the world
  3. the ability to employ that reasoning adaptively in different environments

Factors affecting intelligence
• about 25% of the total variance in IQ of offspring is related to parental IQ
• IQ is directly proportional to the socioeconomic status of the family

IQ testing
• in 1904 the French Government employed Alfred Binet to look into special educational programs for children failing in school
• in 1916, Lewis Terman at Stanford University developed an English version known as the Stanford-Binet
• IQ was defined as: \[ \frac{\text{mental age}}{\text{chronological age}} \times 100 \]
• mental ability is measured by problem solving and reasoning
• 6 items are allocated to each year
• the highest attainable score of chronological age in the Stanford-Binet test is 15

Modern IQ testing
• the average score obtained by people at each age level is assigned the IQ value of 100
• your IQ score reflects your relative standing within a population of your age

Evaluating IQ tests

How reliable are IQ tests?
• IQ tests given before the age of 7 do not correlate very highly with scores on IQ tests given later for two main reasons:
  1. test items used for young children are different from those used with older children
  2. cognitive abilities change rapidly in the early years
• for teenagers and adults, the reliability of IQ tests is high - the split-half reliability is generally above +0.90
How valid are IQ tests?

- IQ tests appear to be most valid for assessing aspects of intelligence that are related to schoolwork, such as abstract reasoning, and verbal comprehension
- correlation between Raven’s Progressive Matrices and the WAIS are about 0.75
- mental age gives a 68% chance of correctly answering a question for the corresponding chronological age
- their predictive validity (correlation between IQ scores and high school grades) is about +0.50
- the predictive validity of IQ scores is especially good in relation to success in managerial and other complex jobs
- IQ scores are also highly correlated with performance on ‘real-life’ tasks such as reading medicine labels, and using the phone book
- adult IQ is better at predicting adult educational attainment than childhood IQ is

How fair are IQ tests?

- IQ tests now include more than one scale, so that areas most influenced by culture, such as vocabulary, can be assessed separately
- non-cognitive factors such as motivation and trust influence performance
- many test items are still drawn from the vocabulary and experiences of the dominant middle-class culture in the USA
- IQ tests may reward those who interpret questions as expected by the test designer
- boys:
  - are better at skills involving spatial relations
  - have a greater range of IQ
  - are more gifted
- girls:
  - have better linguistic ability, but not necessarily vocabulary
  - have higher IQ scores in childhood

The Psychometric approach

- analyzes people’s responses to questions and tasks in order to describe the structure of intelligence

Spearman’s g

- Charles Spearman noted that scores on almost all tests of mental abilities was positively correlated
- he concluded that these correlations were created by general mental ability, which he called g, for general intelligence, and a group of special intelligences, which he collectively referred to as s
- the s-factors are the specific information and skills needed for particular tasks

Thurstone and factor analysis

- in 1938, L. L. Thurstone used factor analysis to analyze the correlations among IQ tests to identify the underlying factors, or abilities, being measured by those tests
- he found seven relatively independent primary mental abilities:
• numerical ability
• reasoning
• verbal fluency
• spatial visualization
• perceptual ability
• memory
• verbal comprehension

Cattell
• Raymond B. Cattell (1963) suggested that there are two kinds of \( g \) which he labelled fluid and crystallized
• **Fluid intelligence** is the basic power of reasoning and problem solving
  • it allows us to think critically about assertions, and to understand relationships between concepts
• **Crystallized intelligence** involves specific knowledge gained as a result of applying fluid intelligence
  • it produces a good vocabulary, and familiarity with the multiplication tables
• crystallized intelligence may continue to grow into old age, whereas fluid intelligence remains stable throughout adulthood, and then declines in later life

The Information-Processing Approach
• analyzes the *process* of intelligent behaviour, not the *products* of intelligence, such as test answers
• research suggests that only about 25% of the variation seen in people’s performance on general mental abilities tests can be accounted for by differences in their information-processing abilities, such as speed of access to long-term memory, or capacity of working memory

The Triarchial Theory of Intelligence
• proposed by Robert Sternberg (1988)
• there are three aspects of intelligence:
  1. its internal components
  2. the relation of these components to experience
  3. its external effects

Internal components
• there are three sets of internal processes or *components*:
  • performance components
  • knowledge-acquisition components
  • metacomponents
• **Performance components:**
  • perceiving stimuli
  • holding information in working memory
• calculating sums and differences

• **Knowledge-acquisition components:**
  • involve the selective application of the processes used in gaining and storing new information

• **Metacomponents:**
  • control the performance and knowledge-acquisition components
  • determine the problem-solving strategies people use

**Relationship between the internal world and the external world**
• amounts to the ability to profit from experience by altering how the components are applied
• involves being able to deal with novelty, and to make some processes automatic

**Shaping environments**
• intelligence is manifested in everyday life, by adapting to or shaping environments
• intelligence involves the use of all three types of components to achieve goals
• intelligent behaviour therefore varies with the context

**Gardner’s theory of Multiple Intelligences**
• Howard Gardner (1983)
• proposed that biology provides the capacity for six different ‘intelligences’ valued by society:
  1. linguistic
  2. logical-mathematical
  3. spatial
  4. musical
  5. body-kinesthetic - the skills demonstrated by dancers, athletes, and surgeons
  6. personal - refers to knowledge and understanding of oneself and of one’s relations to others
• these ‘intelligences’ normally interact, but they can function with some independence and people may develop certain intelligences further than others
• IQ tests normally only sample the first three of these intelligences

**Changes with age**

**Working memory**
• the ability to hold and organize material in working memory declines beyond age 50 or 60

**Processing speed**
• there is general slowing of all mental abilities
• ? due to reduced storage capacity / impaired processing efficiency / problems in coordinating simultaneous activities

Organization
• older people are less likely to solve problems by adopting specific strategies
• the tests carried out by older people tend to be more random and haphazard

Flexibility
• older people tend to be less flexible in problem solving
• they are less likely to consider alternative solutions
• they require more information before making a tentative decision
• older people are more likely to choose conservative, risk-free options

Control of attention
• the ability to direct or control attention declines with age
Commonly used psychiatric instruments

Diagnostic Instruments

NIMH Diagnostic Interview Schedule (DIS)
- Robbins (1981)
- highly structured interview
- generates a diagnosis by three systems:
  1. DSM-III
  2. the Feighner criteria
  3. Research Diagnostic Criteria (RDC)
- assesses symptoms which may have occurred at any time in the patient’s life, and in more detail over the time periods of 2 weeks, the last month, 6 months, and a year
- takes 45-75 mins
- can be used for a range of disorders including alcoholism, drug abuse, and anorexia nervosa
- not suitable for mental handicap or organic disorders
- specificity is good, but sensitivity is not so good

Present State Examination (PSE)
- Wing et al 1974
- semi-structured interview schedule
- each symptom is rated on a 3-4 point scale
- covers symptoms in the last 4 weeks
- can also be used to determine caseness
- originally designed for hospital in-patients
- not suitable for alcoholism, personality disorder, mental retardation, or organic disorders
- the rules have been incorporated into a computer program, CATEGO
- more reliable than the SADS for identifying schizophrenia

Schedule for Affective Disorders and Schizophrenia (SADS)
- Endicott and Spitzer, 1978
- structured interview assessing symptoms on a 7-point scale
- three versions: SADS, SADS-L (for no current episode of illness), SADS-C (where change is being measured)
- mainly used for hospital patients
- covers most diagnoses including personality disorders, drug and alcohol misuse, and bipolar depression
- not suitable for anorexia nervosa or organic disorders
- gives a diagnosis on RDC
- it is able to measure change
Schedule for Clinical Assessment in Neuropsychiatry (SCAN)
• incorporates Present Status Examination (PSE) 10 with an updated Catego program
• generates both ICD-10 and DSM-III-R diagnoses

Structured Clinical Interview for DSM-III-R (SCID)
• generates DSM-III-R diagnosis

**Instruments to define and identify psychiatric ‘cases’**

**General Health Questionnaire (GHQ)**
• self-rated questionnaire of 60 items
• each item has four possible responses (usual, no more than usual, rather more than usual, much more than usual)
• a score of 11 on the full version discriminates between ‘cases’ and ‘non-cases’
• designed for use in a community setting – only takes 6-8 minutes
• it can predict short-term response to various treatments
• it has a scale version
• not suitable for the detection of psychoses

**Instruments for measuring psychiatric symptoms**

**Brief Psychiatric Rating Scale (BPRS)**
• widely used measure of psychotic symptoms (not just schizophrenia) and psychopathology
• structured interview schedule
• 16 items (11 items based via verbal report, and 5 items based on observed behaviour)
• each item is scored on a 7-point scale
• produces subscores for:
  • affective
  • psychotic
  • negative symptoms
• since it is observer rated, and the way that the symptoms are elicited is not standardized, reliability is reduced
• unsuitable for minor psychiatric illness

**Symptom Rating Test (SRT)**
• designed to measure distress
• most suitable for neurotic patients
• very reliable
Global Assessment/Screening

- **Clinical Global Impression (CGI)**
  - global observation of severity of psychiatric illness
  - 7-point scale

- **Nurses Observation Scale for Impatient Evaluation (NOSIE)**
  - mostly used for inpatients with psychosis
  - analysis produces three positive factors (personal neatness, social competence and social interaction) and three negative factors (manifest psychosis, retardation, and irritability)

- **Global Assessment Scale (GAS)**
  - evaluates social functioning and severity of symptoms

- **Hopkins Symptom Checklist (SCL-90)**
  - 90-item checklist of 9 symptom dimensions
  - 3 global indices of distress

**Depression rating scales**

**Beck Depression Inventory (BDI)**
- self rating scale
- 21 items
- maximum score of 60
- useful for measuring change
- criticisms:
  - it is prone to *halo effects* – the subject’s general attitude can influence the response to many of the items
  - there is uncertainty to what is actually measured

**Hamilton Rating Scale for Depression (HamD, HRSD)**
- observer rating – designed to be filled in at the end of an unstructured interview
- 17 items, and severity dimension
- should only be used on patients with an established diagnosis of depression – it is not a diagnostic instrument but has been used as such by having a cut-off score to indicate the presence of depression
- assesses symptoms in the last seven days
- maximum score is 52, but a score of 30 indicates severe depression
- criticisms:
  - reliability is poor in some items
  - it has a heterogenous and unstable factor analytic structure
  - there is no general factor
  - behavioural symptoms and somatic complaints are preferred over self-reported distress

**Zung Depression Scale**
- self rating
• 20 items

Montgomery and Asberg Depression Rating Scale (MADRS)

• 10 items
• concerned exclusively with the psychological aspects of depression (no reference to somatic symptoms)
• particularly useful for depressed patients with concurrent physical illness
• can be used for assessing patients who are likely to experience side effects from medication
• suggested cut-offs are:
  • 0-6 recovered
  • 7-19 mild depression
  • 20-34 moderate depression
  • 35-60 severe depression

Hospital Anxiety and Depression Scale (HADS)

• 7 items concerned with anxiety, and 7 with depression
• designed specifically for use in non-psychiatric hospital departments
• concerned with the psychological symptoms of neurosis
• a score of 11 or more on both scales is used to distinguish cases

Anxiety rating scales

Hamilton Rating Scale for Anxiety (HRAS)

• observer scale
• designed for use with patients already diagnosed with an anxiety disorder
• 14 items
• covers psychic and somatic dimensions, but is somatically biased
• inter-rater reliability is good

Zung Anxiety Scale

• combined observer and brief report formats
• 20 items

SADS-L (Anxiety)

• based on the SADS
• used for rating a wide range of phobias

HAS

• Snaith
• is an adaptation of the CAS
**Mania**

**Young Mania Scale**
- observer scale
- 11 items

**Manic Rating Scale (MS)**
- based on observations over an 8 hour period
- designed for objective measurement by nurses
- measures the frequency of manic behaviour
- not sensitive to change

**Modified Manic Rating Scale (MMS)**
- more sensitive to change than the MS

**Schizophrenia rating scales**

**Comprehensive Assessment of Symptoms and History (CASH)**
- evaluates major psychoses

**Schedule for the Assessment of Positive Symptoms (SAPS)**
- details hallucinations, delusions, bizarre behaviour, formal thought disorder

**Schedule for the Assessment of Negative Symptoms (SANS)**
- details alogia, affective blunting, avolition, asocialility, attentional impairment

**Positive and Negative Symptoms Scale (PANSS)**
- developed from BPRS
- more structured
- includes general psychopathology section

**Camberwell Family Interview (CFI)**
- five scales:
  - critical comments
  - hostility
• emotional over-involvement
• warmth
• positive remarks
• only the first three are associated with high expressed emotion and predict relapse

**Obsessive Compulsive Disorder**

Maudsley Obsessional-Compulsive Inventory (MOCI)
• self-rating
• 30 items – ‘true-false’
• fairly sensitive to change

Yale-Brown Obsessive-Compulsive Scale (YBOCS)
• observer scale
• 19 items
• measures only symptoms

Leyton Obsessional Inventory
• four main components (being clean and tidy, feeling of incompleteness, checking, and ruminating)
• uses a card sorting process
• can produce scores for resistance, interference, and traits
• specific and sensitive test, but less sensitive to change

**Psychosomatic/ Eating disorders**

Eating Attitudes Test (EAT)
• self report on eating behaviour

McGill Pain Questionnaire
• detailed self report

Psychosocial Adjustment to Illness Scale (PAIS)
• self report and interview
• based on adjustment to chronic illness
## Personality

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<td>• unstructured stimuli create maximum freedom of response</td>
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### Minnesota Multiphasic Personality Inventory (MMPI-2)
- for assessment of personality and psychopathology
- 566-item true-false test
- ten clinical scales:
  - hypochondriasis
  - depression
  - hysteria
  - psychopathic deviate
  - masculinity-femininity
  - paranoia
  - psychasthenia (obsessive compulsive)
  - schizophrenia
  - hypomania
  - social introversion
- four validity scales
- focuses on the overall pattern in the clinical scales

### Personality Assessment Schedule (PAS)
- Tyrer, Alexander & Ferguson 1987
- 24 personality variables which are rated by the observer
- after 3 interviews with the patient, the observer makes a separate assessment
- has to be an interview with an informant who has known the patient for 10 years
- results can be expressed graphically

### Structured Clinic Interview for DSM-III-R Personality Disorders (SCID-II)
- provides a series of questions on each aspect of DSM-III-R personality disorders
- 1=absent or false, 2=subthreshold, 3=threshold or true
- it then states how many ‘3’s have to be present for that personality disorder to be present
The Million Clinical Multiaxial Inventory IV 1994 (MCMI IV)
- based on DSM IV
- 175 question self-administered questionnaire
- takes 30 mins to complete
- can be computer assessed

Neuroticism Extraversion Openness Personality Inventory, Revised (NEO-PI-R)
- measures personality variables in normal populations
- measures the "big five" personality traits
- can be used in the diagnosis of personality disorders

Eysenck Personality Questionnaire
- incorporates a lie scale
  high scores on the psychoticism scale are claimed to resemble stereotyped psychopahts

California Psychological Inventory
- measures 18 traits believed to be part of normal personality, such as achievement, dominance, self-acceptance and sociability

Projective tests
- **Thematic Apperception Test (TAT)**
  - measures need for achievement, and motivational factors
- **Rorschach Inkblot Test**
- **Sentence Completion Test**
- **Draw-A-Person Test**

**Intelligence Tests**

The Wechsler Adult Intelligence Scale (WAIS)
- 6 **verbal** subtests
  - general information
  - comprehension
  - vocabulary
  - arithmetic
  - digit span
  - similarities
- 5 **performance** subtests
  - block design
• object assembly
• picture completion
• digit symbol
• picture arrangements
• the WAIS allows computation of a *verbal IQ*, a *performance IQ*, and an *overall IQ*

(Ravens) Progressive Matrices
• measures non-verbal IQ
• consists of a diagram-completion test which exists in three versions:
  • Standard, for average ability
  • Coloured, for children and those of lower ability
  • Advanced, for those of above average ability

Mill Hill Scale
• measures verbal IQ

**Brain Injury**

Halstead-Reitan Battery
• consists of 10 tests
• allows measurement of the location and effects of brain lesions

**Organic Brain Dysfunction**

Bender-Gestalt Test
• can be used in the assessment of:
  • mental retardation
  • aphasias
  • psychoses
  • neuroses
  • malingering

**Cognitive Impairment in the Elderly**

• *Mini Mental State Examination*
  • dementia is suggested with scores less than 24-27
• CAMDEX
• Mental Test Score
• Crichton Behaviour Rating Scale
  • includes a cognitive measure
• **GERRI**
• **Clifton Assessment Procedures for the Elderly (CAPE)**
  • can be used to predict survival, placement, level of disability, and decline in elderly subjects
• **Geriatric Mental State Schedule**
• **The Kew Cognitive Map**
  • assesses parietal lobe function and language functions in patients with dementia
• **Kendrick Battery**
  • distinguishes between normal, functionally impaired, and demented elderly groups

**Dementia Rating Scale (Mattis, 1976)**
• covers five areas:
  1) **Attention**
     a) Digits forwards & backwards up to four
     b) Follow two successive commands, e.g., “Open your mouth and close your eyes”
  2) **Initiation and perseveration**
     a) name articles in supermarket
     b) repeat series of one-syllable rhymes
     c) perform double alternating hand movements
     d) copy a row of alternating O’s and X’s
  3) **Construction**
     a) Copy a diamond in square
     b) Copy a set of parallel lines
     c) Write name
  4) **Conceptual**
     a) Four WAIS-type Similarities items, identify which of three items is different
  5) **Memory**
     a) Delayed recall of five-word sentence
     b) Personal orientation
     c) Design recall

**Stockton Geriatric Rating Scale**
• For use by “nonprofessional ward staff” to rate patients’ behaviour in such areas as eating, toileting, self-direction, and sociability
• Each item is scored as, “often”, “sometimes”, “almost never”

**Substance Abuse**

**CAGE**
• cut down on drinking, annoyed by others criticizing, guilty over drinking, eye-opener
Michigan Alcohol Screening Test (MAST)
- 25 item interview or 10 item self-report

Severity of Alcohol Dependency Questionnaire (Stockwell Questionnaire)
- measures impact of alcoholism

Social Stress

Social Readjustment Rating Scale (Holmes and Rahe)
- self-report questionnaire containing 43 classes of life event
- includes death of spouse (100) to minor legal violation (11)

Life Events and Difficulties Schedule (LEDS)
- Brown and Harris
- semistructured interview schedule
- 38 areas probed
- high reliability
- high validity