

## The Minnesota Multiphasic Personality Inventory

MMPI

## What is the MMPI?

- The Minnesota Multiphasic Personality Inventory is "The most thoroughly researched objective personality assessment instrument yet produced"
- Minnesota - Because it was developed there
- Multiphasic - Applied to tests or investigations designed to reveal various phases or aspects of personality, health, etc.
  - Coined by the MMPI designers
- Personality-
- Inventory-

MMPI

## Early Personality Tests

- The first tests were devised by our old friends, Sir Francis Galton (1884) & James Cattell (1890)
- In WWI, Woodworth (1920) compiled a list of 116 symptoms of 'psychological nervousness'- the Woodworth Psychoneurotic Inventory
  - This and related tests were composed of symptom sets taken from books = had high face validity

MMPI

## Problems with Earlier Personality Tests

- There were two main problems with early inventories:
  - i.) 'Load' on any trait was considered to be a function of the number of items endorsed- a bad idea (Why?)
  - ii.) Criterion groups were established by comparison with extreme responses from other similar symptom sets, unvalidated by any empirical checks
  - iii.) It was assumed that people told 'the whole truth and nothing but the truth' and (therefore) that their endorsements of items were predictive of their real behavior

MMPI

## Self-Perception Versus Reality

- it became apparent that it would be better to treat endorsement as expressions of how subjects viewed themselves, rather than as objective facts about how they actually were
- The Humm-Wadsworth Temperament Scale (1935) tried to control for subject temperament and to assess reliability by taking a 'no' count
  - too few or too many symptoms denied was a clue about how to read the subject's responses
  - alas, it was also pretty bad due to poor criterion groups

MMPI

## "Out of the psychometric wilderness..."

- Despite this failure, Stark Hathaway & J.C. McKinley (1940) decided to give the empirical approach another shot
- Their ambition aimed high but was focused: they wanted to make one single comprehensive test for measuring all behaviors (inferred from items) that might be of interest psychiatrically
- it took many years to make all the scales
- papers were published on the scales as they were completed, with final versions not out until 1956

MMPI

### Emphasis on Empirical Validation

- They took as an assumption that the link between item endorsement and its significance was a purely empirical question, rather than a matter of theory or opinion
  - This meant empirical validation, using:
    - the population that the test was to be used with- psychiatric patients
    - a recognition that people told untruths, for many reasons
    - item analysis (of sorts...)

MMPI

### Initial Item Guidelines

- Notwithstanding the problems that had beset other tests, the initial 550 (566) item set was drawn from many of the same old sources: clinical intuition, the medical (especially psychiatric) literature, and even previous tests:
  - i.) Stated as brief, clear declarative sentences (true/false)
  - ii.) Written in simple everyday idiomatic language
  - iii.) Written in the first-person singular
  - iv.) Avoiding negatives
  - v.) Assuming only common knowledge
- takes about 90 minutes to complete

MMPI

### Normal Sample

- The test was normed on 1040 relatives and friends of hospital patients, students, and white-collar workers, as well as 254 non-psychiatric hospital patients
  - The group was not very carefully controlled on sex, age, or SES

MMPI

### Patient Samples

- The beauty of the MMPI design came in the way it was validated on pre-chosen patient samples (concurrent validity)
- Patients were selected who had relatively pure uncomplicated diagnoses of different traits that the authors of the MMPI wished to diagnose
- Although it has problems, it is without doubt the best clinical assessment tool out there today
- It is also highly researched, found to be used in 5043 published studies by one 1978 review

MMPI

"It is essential note that the details of scale development have involved many tentative trials with subsequent validating studies and the finally the adoption of the best scale for inclusion."

McKinley & Hathaway, 1944

MMPI

### Example 1: Scale 1 Hs (Hypochondriasis)

- Hypochondriasis is characterized by an abnormal concern about physical symptoms in the absence of any evidence of physical infirmity or illness
- 50 'pure' hypochondriacs were identified
- Items were included in the Hs scale if there was significant difference in the frequency of agreement between the hypochondriacs and non- hypochondriacs
  - Difference > 2 SEs of the proportion endorsing the item

MMPI

### Hs: Item Exclusion

- Some were excluded for lacking face validity: e.g. obviously based on marital status or attitude towards ones children
- Others were excluded by more defensible empirical means: contrasting a non-hypochondriac patient group with high scores against true hypochondriacs (also with high scores)

MMPI

### Hs: Cross-Validation

- The whole scale was then cross-validated by trying it on a second set of hypochondriacs, patients with physical problems, and normals, and showing that the scale differentiated between the three

MMPI

### Hs: Examples

- Positives:
  - 23. I am troubled by attacks of nausea and vomiting
  - 161. The top of my head sometimes feels tender.
  - 189. I feel weak all over much of the time.
- Negatives
  - 2. I have a good appetite
  - 7. My hands and feet are usually warm enough
  - 190. I have very few headaches
  - 243. I have few or no pains.

MMPI

### Example 1: Scale 2 D (Depression)

- Depression is (a state rather than trait) characterized by depressed feelings, low morale, dissatisfaction
- 50 diagnosed depressive patients served as the reference group
- There were also a group of depressed normals, and normal groups

MMPI

### D: Item Selection

- Items were included in the D scale if
  - They showed a progressive increase in frequency of endorsement from the normal through the depressed normals to the patients
  - The %age difference between the normal and reference group was 2.5 times the standard error
- 60 items were selected
  - 11 of served as correction items: to identify special conditions (suppressor variables), including physical illnesses and religious fervor

MMPI

### D: Validity

- Normals averaged 18
- Physically ill averaged 22
- Random psychiatric cases averaged 24
- Depressed group averaged 37

MMPI

### D: Examples

- Positives:
  - 43. My sleep is fitful and disturbed
  - 182. I am afraid of losing my mind
  - 259 I have difficulty in starting to do things
- Negatives
  - 2. I have a good appetite
  - 8. My daily life is full of things that keep me interested
- Correctors (Negative)
  - 98. I believe in the second coming of Christ
  - 154. I have never had a fit or convulsion

MMPI

### The Clinical MMPI Scales

#### The neurotic triad:

- 1 Hs: Hypochondriasis (33): Abnormal concern with bodily functions
- 2 D: Depression (60): Depressive affect
- 3 Hy: Hysteria (60): Neurotic symptoms for avoiding or hiding from conflict and responsibility
  - High religious Bible students also score high
- 4 Pd: Psychopathic Deviate (50): Measure disregard for social customs
- 5 Mf: Masculinity/Femininity (60): Gender roles/ Homoeroticism

MMPI

### The Clinical MMPI Scales

#### The psychotic tetrad

- 6 Pa: Paranoia (40): Suspiciousness, delusions of grandeur and persecution
- 7 Pt: Psychasthenia (48): General neurotic symptoms, including obsession, compulsion, fear, and guilt
- 8 Sc: Schizophrenia (78): Bizarre thoughts and behavior, delusions, hallucinations
- 9 Ma: Hypomania (46): Emotional excitement and over-activity
- 0 Si: Social Introversion (70): Shyness, insecurity, low social interest

MMPI

### Other MMPI Scales

- Over 500 experimental scales have been constructed
- most have been little researched, although a few are fairly widely used

MMPI

### The Question Scale

- 4 scales were designed specifically to enable real-time validity checks of individual MMPI profiles
  - i.) The question (Q or ?) scale: Items answered both true and false (= "cannot say")
    - High scores in general neurotic ('psychoasthenic') patients
    - this scale has never been well-validated, and is now little used

MMPI

### The Lie Scale

- 4 scales were designed specifically to enable real-time validity checks of individual MMPI profiles
  - ii.) The lie (L) scale: 15 false-scoring items that try to catch people attempting to put themselves in a good light
    - it was never validated or cross-validated but based on a priori notions
    - a high L scale does not totally invalidate the profile, but suggests that the interpretation must be cautiously made
    - sophisticated subjects will not be fooled by it

MMPI

### Scale L Examples

- 15. Once in a while I think of things too bad to talk about
- 45. I do not always tell the truth
- 75. I get angry sometimes
- 150. I would rather win than lose in a game

MMPI

### The Validity/Frequency Scale

- 4 scales were designed specifically to enable real-time validity checks of individual MMPI profiles
  - iii.) The Validity (F = Frequency) Scale
    - 64 disparate items answered almost always in one direction by the normal group
    - A high F usually indicates carelessness, inattention, or lack of comprehension or cooperation, although subjects high on the schizophrenic spectrum may also score high on the F Scale.

MMPI

### The Validity/Frequency Scale: Examples

True:

- 27. Evil spirits possess me at times
- 151. Someone has been trying to poison me
- 210. Everything tastes the same

False:

- 65. I loved my father
- 220. I loved my mother
- 272. At times I am full of energy

MMPI

### The Correction (K) Scale

iii.) The Correction (K) Scale

- Items endorsed by deviants with relatively normal profiles = false negatives
- using a weighting procedure and correction items, it was possible to define a means to use this to increase validity of many clinical scales (Hs, Pd, Pt, Sc, Ma)
- BUT it is also loaded on SES: college-educated subjects are 1.5 SDs higher on this scale than non-college-educated subjects

MMPI

### The Correction (K) Scale

True:

- 6. I have very few quarrels with members of my family

False

- 160. I have never felt better in my life than I do now
- 142. I certainly feel useless at times
- 170. I worry over money and business
- 383. People often disappoint me
- 398. I often think "I wish I was a child again".

MMPI

### MMPI-2

- The MMPI was re-normed on 2600 people, and updated in the 1980s
- All items were retained, but 14% were re-worded
- 154 new experimental items were included, for 'new' disorders such as eating disorders, Type A personality, drug abuse
- The t-scores were fixed up, to be better comparable between scales

MMPI

### MMPI-2

- Test/re-test  $r$  of individual scales = .58 to .92
- SE is large
- Nevertheless, studies (mostly on the old MMPI) indicate it works to some degree: a high score on a scale predict the proper clinical diagnosis 60% of the time

MMPI