Lecture 1 Psychological Testing and Measurement
Sunthud Pornprasertmanit

Overview and History of Psychological Testing

Overview of Psychological Testing

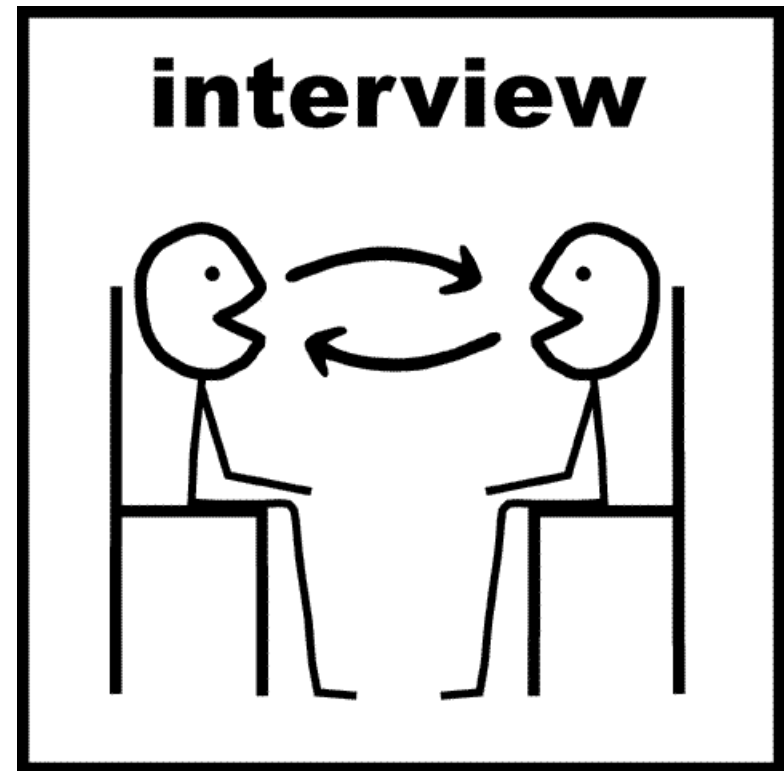Lecture 1 Psychological Testing and Measurement
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Your Experience about Testing

- Entrance Examination
- Mastery Testing
- Interview

What PT Measures?

- Ability Test
- Intelligence Test
- Aptitude Test
- Personality Test
- Neuropsychological Assessment
- Attitude
- Interest
- Value
- Predictive Test

interview

Context used PT

- Education
- Industrial Personnel
- Military Selection
- Clinical Screening and Testing
- Individual Counseling
- Research
- Forensic Setting
- Project Evaluation

Formats of PT

- Individual Test
- Paper-and-pencil Test
- Essay Writing
- Interview
- Peer Rating
- Biographical Data
- Assessment Center
- Computer Test
- Computer Adaptive Test

WebCAPE Computer-Adaptive Placement Exam

La mayoría de los países latinoaméricanos cultivan una fruta muy deliciosa y saludable conocida como el plátano. El plátano es cultivado en los países tropicales. Estos países dividen los plátanos en varias categorías. Los mejores plátanos son exportados a otros países, los mediocres permanecen en el país, y los malos se los dan a los animales.

¿Qué plátanos no son exportados?

A. Los mediocres
B. Los malos
C. Los mejores
D. A and B

Read the selection and mark the letter of the best answer to the question.

Mark the correct answer and click "Confirm Response"

○ A   ○ B   ○ C   ● D   Confirm Response

WebCAPE version 2.2 ®Brigham Young University 1998,1999

What is Psychological Test

- A psychological test is essentially an *objective* and *standardized* measure of a sample of behavior.
  - Empirical Evidence (Diagnostic and Predictive Condition)
  - Uniformity of procedure in administering and scoring test
  - Perfect standardization and objectivity cannot be attained in practice.

Quality of PT

- Reliability in specified situations
- Validity in specified situations
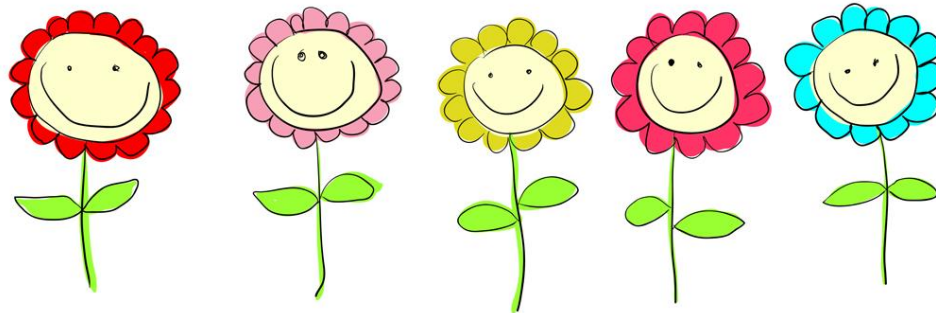
Discussion Question

- Why control the use of psychological tests?
  - ทำไมถึงขายแบบทดสอบให้แต่นักจิตวิทยา?
  - ทำไมถึงไม่ยอมเผยแพร่ข้อคำถามไปสู่สาธารณชน?
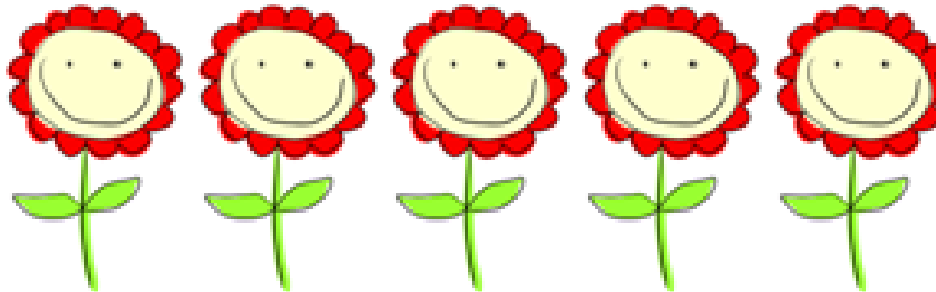
Why control the use of PT?

- To ensure that the test is given by a qualified examiner and that the scores are properly used
- To prevent general familiarity with the test content, which would invalidate the test

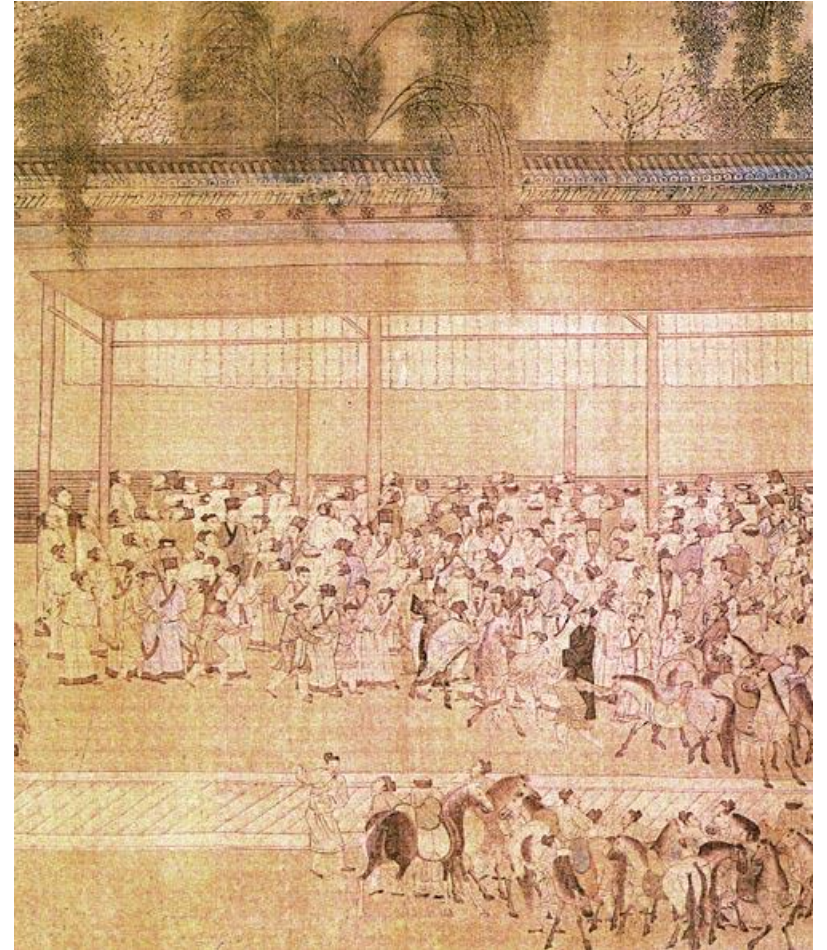# Comparison Aspects in PT

- Inter-Individual

- Intra-Individual

History of Psychological Testing

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Chinese Civil Services Examinations

Antecedents in Clinical Settings

- How to differentiating the "normal" from the "abnormal"
- Emil Kraepelin classified mental disorder according to their causes, symptoms, and courses.

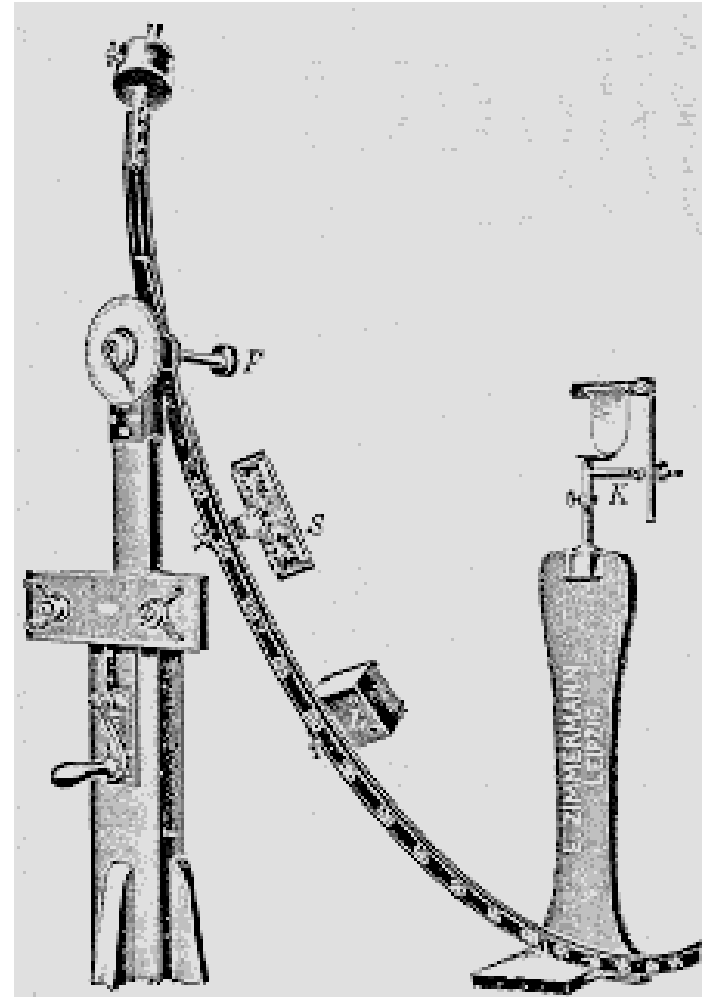Emil Kraepelin

Antecedents in Clinical Settings

- He proposed differentiation method by patients' characteristics such as distractibility, sensitivity, and memory capacity.
- He introduced free association test with psychiatric patients.

Emil Kraepelin

Experimental Psychology

- Developing apparatus measuring human capabilities.
- There had little interest in individual different.

Contributions of Francis Galton

- Interested in measurement of physical and physiological functions
- Developed anthropometric labs
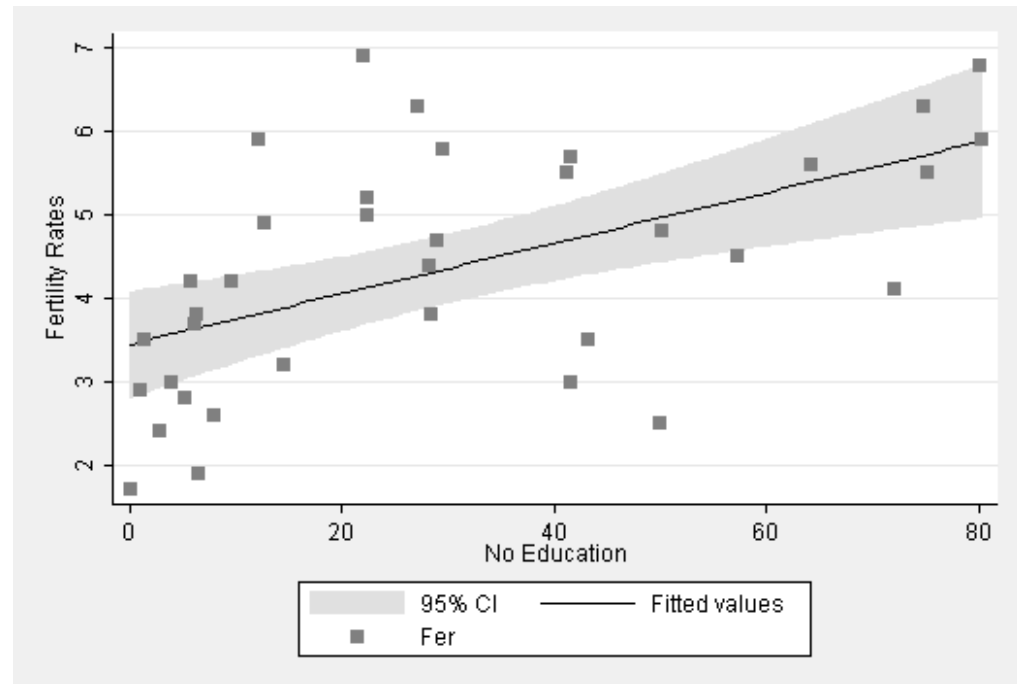- Believed that sensory discrimination was indicator of person's intellect.

Francis Galton's First Anthropometric Laboratory at the International Health Exhibition, South Kensington, 1884–5.

© Science Museum Library / Science & Society Picture Library
Viewed by Guest on 6/1/2007

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First Anthropometric Lab
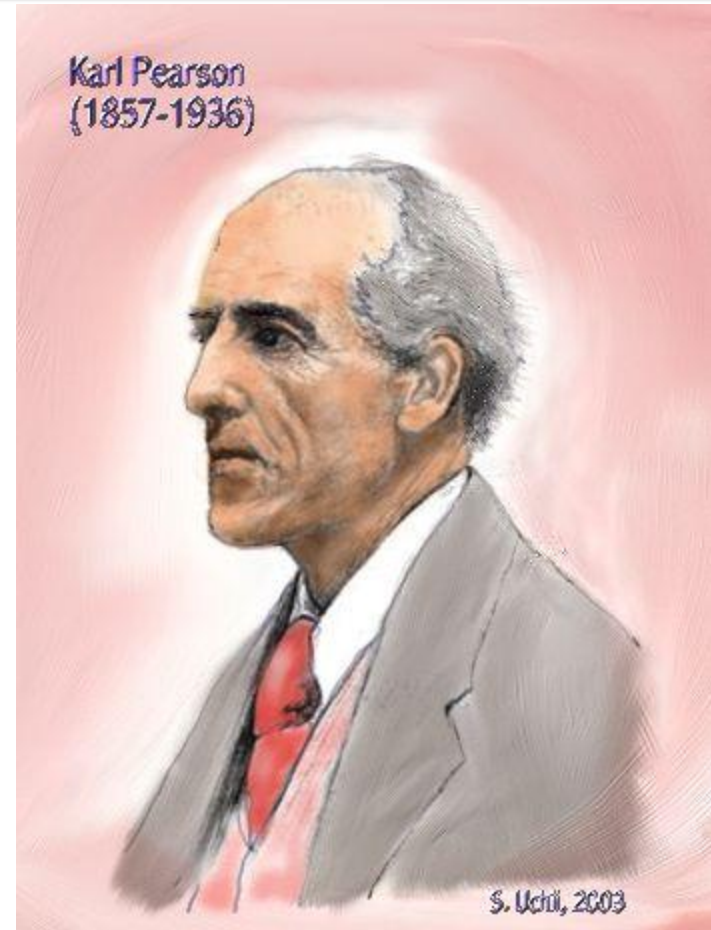Francis Galton

Contributions of Francis Galton

- He also discovered the phenomena of regression and correlation.
- He pioneered in application of rating scale and questionnaire methods.

Regression Line

Karl Pearson

- Karl Pearson, Galton's student, developed method for computing correlation coefficient.

Karl Pearson

Hermann Ebbinghaus

- Well-known in research in memory.
- Devised technique known as Ebbinghaus Completion Test

Hermann Ebbinghaus

Cattell and the Early "Mental Tests"

- He interested in the measurement of individual differences.
- First used term "Mental Test"
- Falsified Galton claim that sensory discrimination was the indicator of person's intellect.

James Cattell

Binet and the Rise of Intelligence Test

- How to discriminate retarded children to special education.
- Developed first intelligence test, Binet-Simon Scale.
- Found correlation between score and academic achievement.

Alfred Binet

Binet and the Rise of Intelligence Test

- The child's score was expressed as mental age, age of normal children whose performance he or she equaled.
- He preferred neutral term "mental level" than "mental age".

Example of items in B-S Scale

Binet-Simon Scale

Stanford-Binet IQ Test

- After Binet died, Terman was developed Stanford-Binet IQ Test, the more extensive and psychometrically refined test.
- First used term Intelligence Quotient (IQ)

$$IQ = \frac{M.A.}{C.A.}$$

Lewis Terman

Stanford-Binet IQ Test

Wechsler Test

- The most famous intelligence test, now, is Wechsler test.
- Because of disadvantages of Ratio IQ score, Wechsler was first used deviation IQ score.

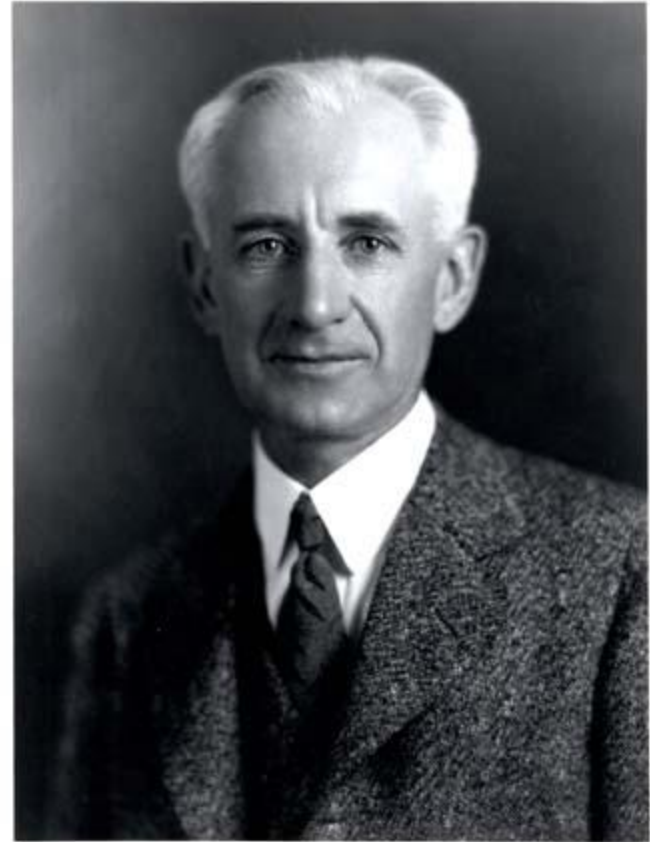David Wechsler

Wechsler Test

WAIS-R Block Design

Wechsler Adult Intelligence Scale (WAIS)
Wechsler Intelligence Scale for Children (WISC)
Wechsler Preschool and Primary Scale of Intelligence (WPPSI)
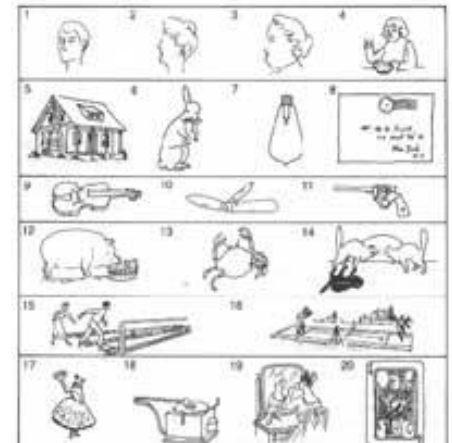
Group Testing

- In 1917, World War I
- APA consider ways in which psychology might assist in the conduct of the war.

Robert M. Yerkes

Group Testing

- Army Alpha and Army Beta was tests used for rapid selection and classification recruits.
- They served as model of group intelligence tests

Army Alpha and Beta

Aptitude Test

- Psychologists came to recognize that the term "intelligence test" was a misnomer.
- Special aptitude tests were developed particularly for use in vocational counseling, selection and classification.

Aptitude Test

- After used factor analysis, developed by Spearman, to intelligence test, there are a lot of independent factors.
- Multiple Aptitude Batteries was group of tests that provided intra-individual analysis.


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            UNVERIFIED WINDOWS CAT-ASVAB TEST SCORE REPORT

Testing Site ID:    591992                    Service:    _DAV_
Testing Session:    Date 2006/03/23     Starting Time:    14:30
Applicant:  Name    _____._____          SSN:    _____
Test Form:          02E                  Test Type:    _Initial_

                    GS  AR  WK  PC  MK  EI  AS  MC  AO  VE
Standard Scores:    63  59  60  52  56  81  64  62  52  58

COMPOSITE SCORES:

Army:       GT   CL   CO   EL   FA   GM   MM   OF   SC   ST
            118  121  128  130  127  132  134  129  128  125

Air Force:  M    A    G    E
            91   76   83   96

Navy/CG:    GT   EL   BEE  ENG  MEC  MEC2 NUC  OPS  HM   ADM
            117  259  234  120  185  173  235  225  177  114

Marine:     MM   GT   EL   CL
            139  122  134  115

AFQT Percentile Score: 80

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| NOTE: This report is NOT valid for enlistment purposes. |
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Armed Serviced Vocational Aptitude Battery
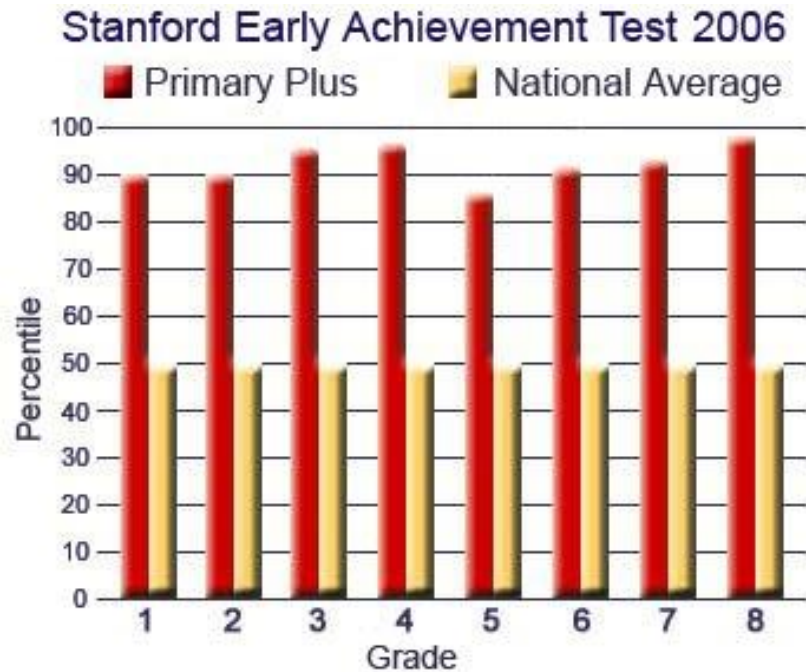
Standardized Achievement Tests

- Thorndike, one of the psychologists who develop standardized tests for measuring the outcomes of school instructions
- In 1923, the first publication of Stanford Achievement Test
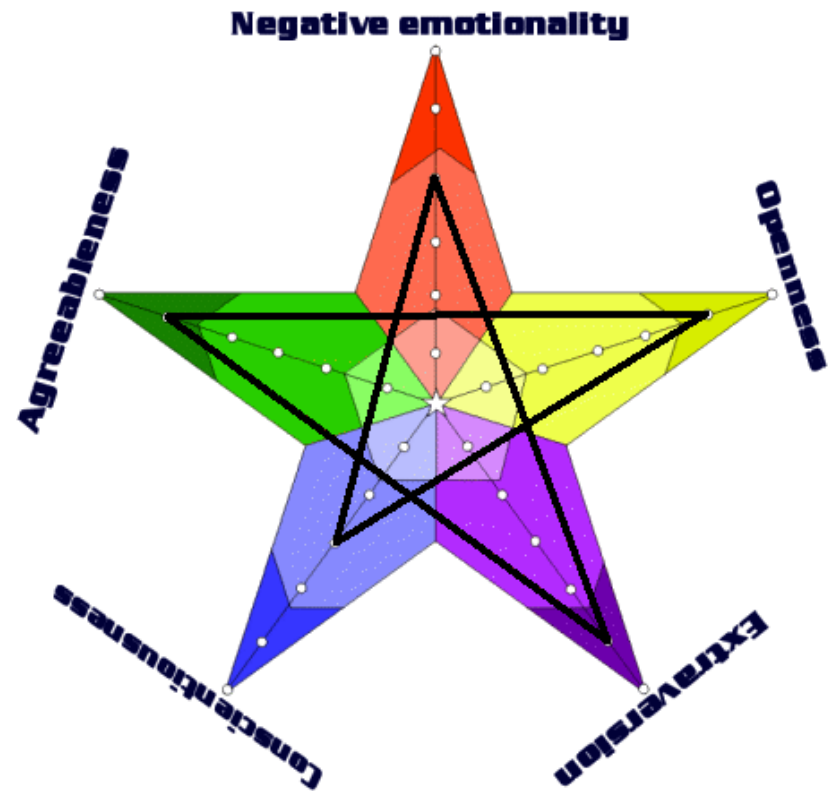

Edwards L. Throndike

Standardized Achievement Tests

- Another noteworthy testing program is the College Entrance Examination Board (CEEB), later changed to Educational Test Service (ETS).

Stanford Early Achievement Test 2006

Assessment of Personality

- The designation "personality test" most often refers to measures of such characteristics as emotional states, interpersonal relations, motivation, interests and attitudes.
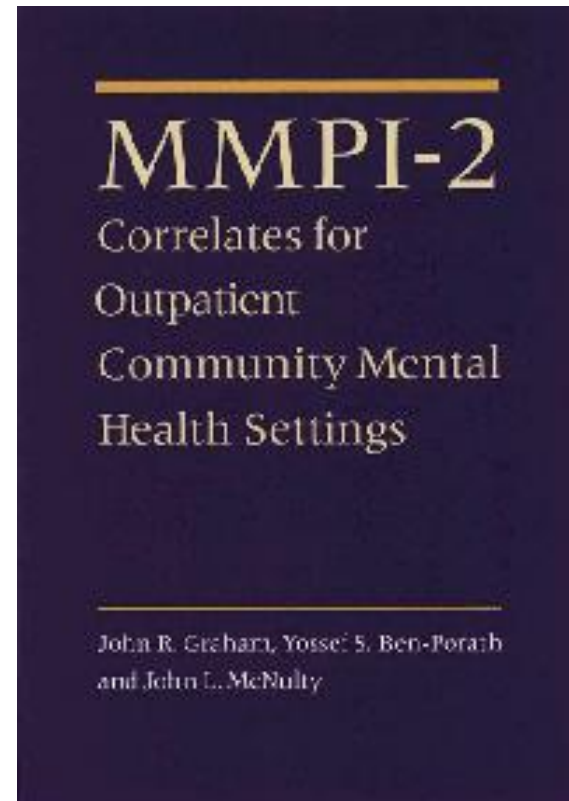
Assessment of Personality

- The prototype of the personality questionnaire is the Personal Data Sheet developed by Woodworth in WW I, identified seriously disturbed men.

Assessment of Personality

- Most successful personality inventories was the Minnesota Multiphasic Personality Inventories (MMPI).

MMPI-2
Correlates for
Outpatient
Community Mental
Health Settings

John R. Graham, Yossef S. Ben-Porath
and John L. McNulty

Assessment of Personality

- Situational tests was developed to assess personality.
- The first application was developed for assessing behaviors such as cheating, lying, stealing, cooperativeness, and persistence.

Assessment of Personality

- In projective tests, clients is given a relatively unstructured task that permits wide latitude in its solution.
- The assumption is the individual will project her or his characteristic modes of response into such a task.

Rorschach Inkblot Test

Assessment of Personality

- This assumption likes free association test and sentence completion test.
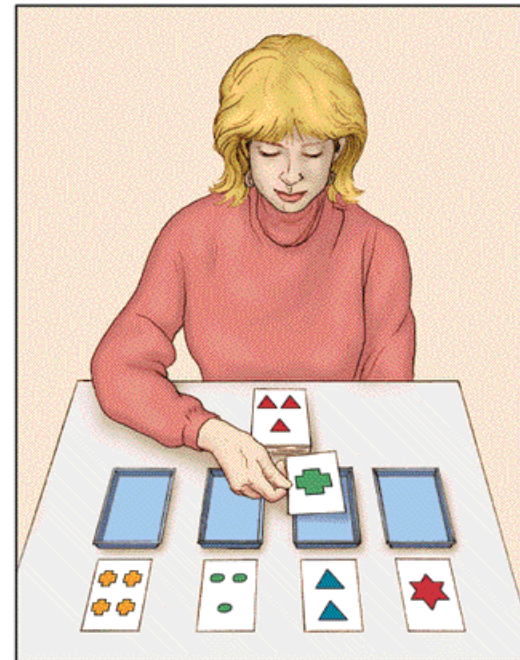

Thematic Apperception Test

Neuropsychological Assessment

- The study of brain-behavior relationship was known as neuropsychology.
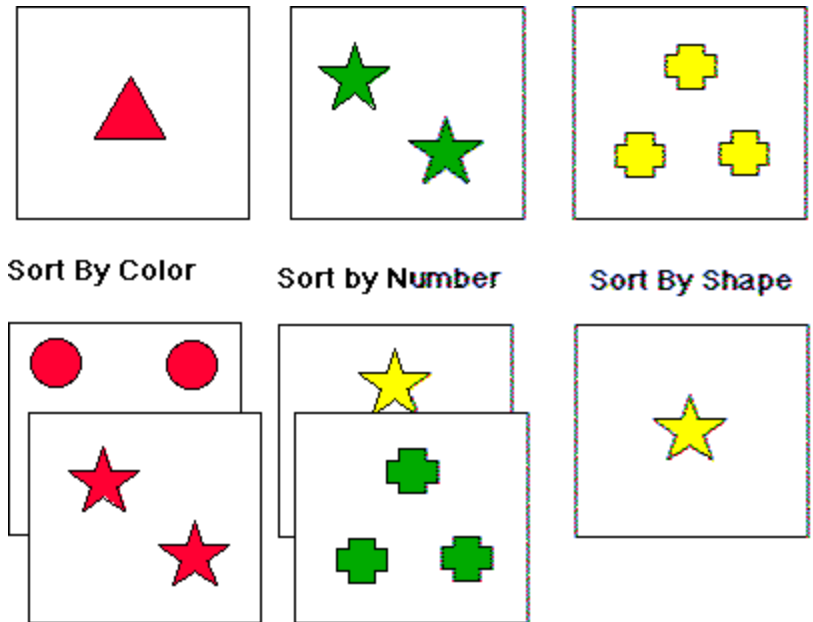- Organicity is the relationship of brain damage and behavioral deficits.

▶ Wisconsin Card Sorting Test
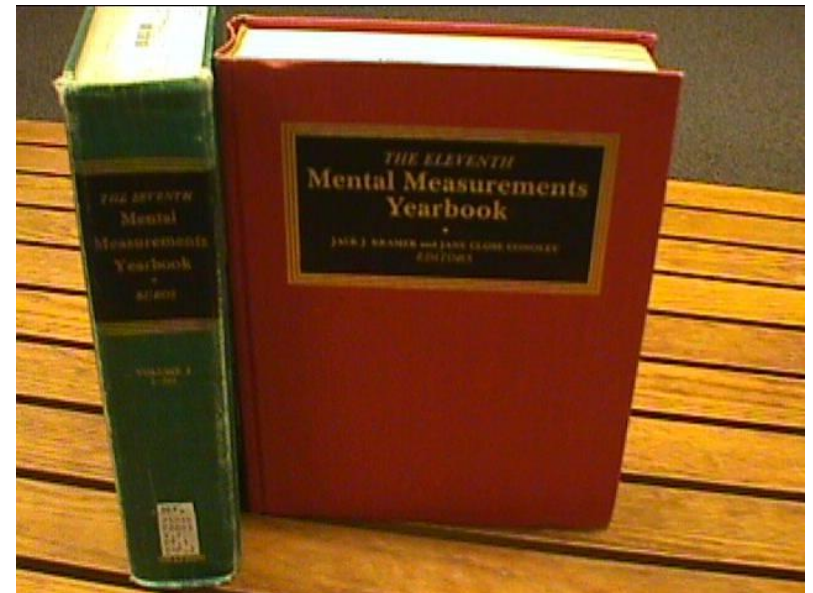
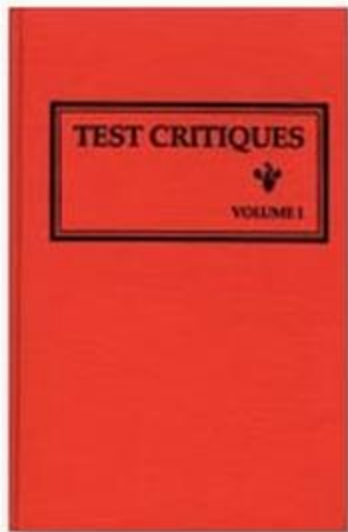Wisconsin Card Sorting Test

Neuropsychological Assessment

- This kind of tests was frequently revised because of advancement in neuropsychology knowledge.

Wisconsin Card Sorting Test

Print Resources: Published Tests

Discussion Question

- Is it necessary to use psychological test?

Case Study 1.1

- Situation: placement students to Talented and Gifted Program
- Former criterion: GPA
- Problem: different tracks grade using different standards
- New criterion: Teacher written evaluation, Stanford Achievement Test, Letters of Recommendations

Case Study 1.1: Questions

- Who are the major constituents?
    - Test takers
    - Test users
    - Test developers
- What form of individual differences is the committee most likely to be focusing on? Why?
- Should all of the different assessment devices be equally weighted

Extra Case Study

- University entrance exam: Different aspects in USA and Thailand

Next Lecture
Statistics in PT

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Statistics in PT

In this class, the descriptive statistics and basic parameter estimation (confidence interval) are used.

Descriptive Statistics

- Frequency Distribution, Histogram
- Measures of central tendency
  - Mean, Median, Mode
- Measures of Variability
  - Variance, Standard Deviation
- Skewness
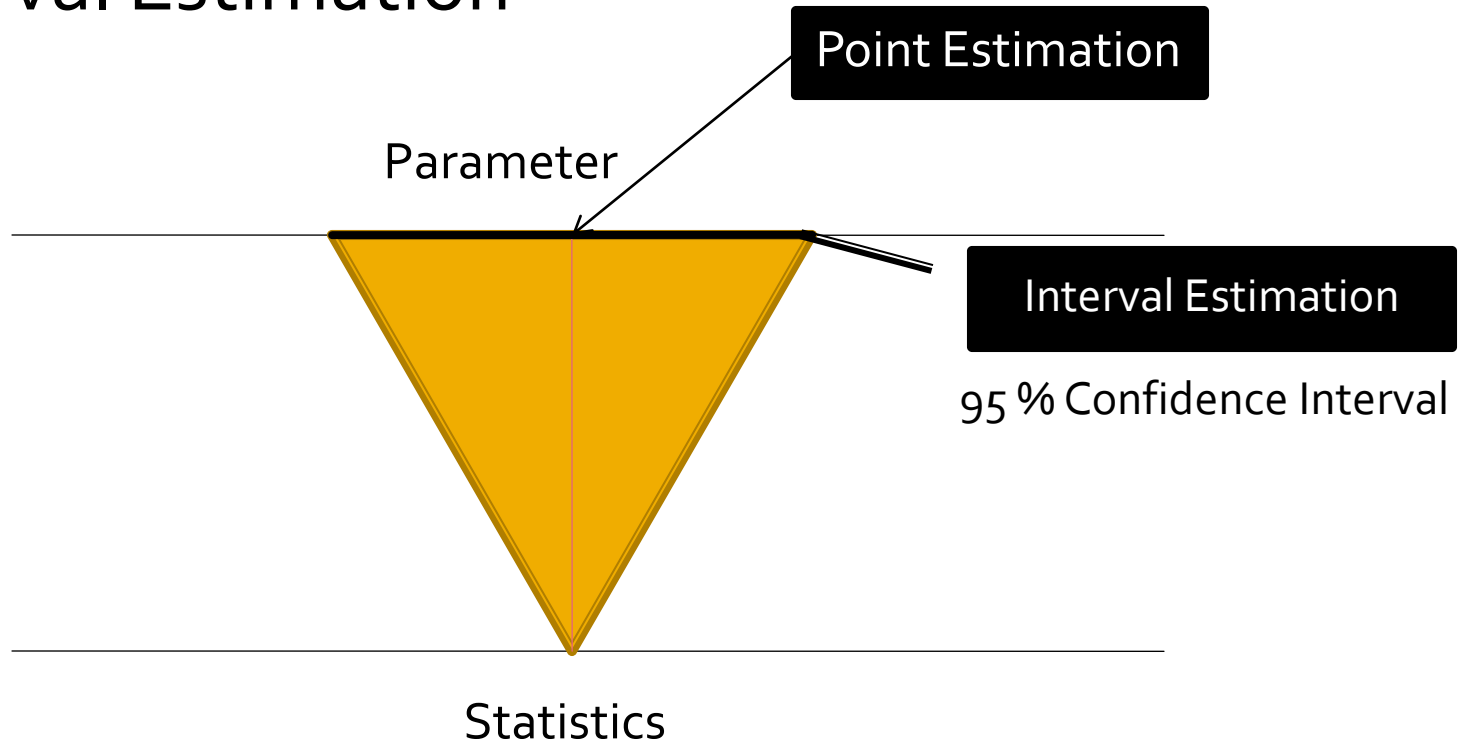- Kurtosis

Transformed Score

- Percentile
- Standard Score (z-score)
- Transformed Standard Score
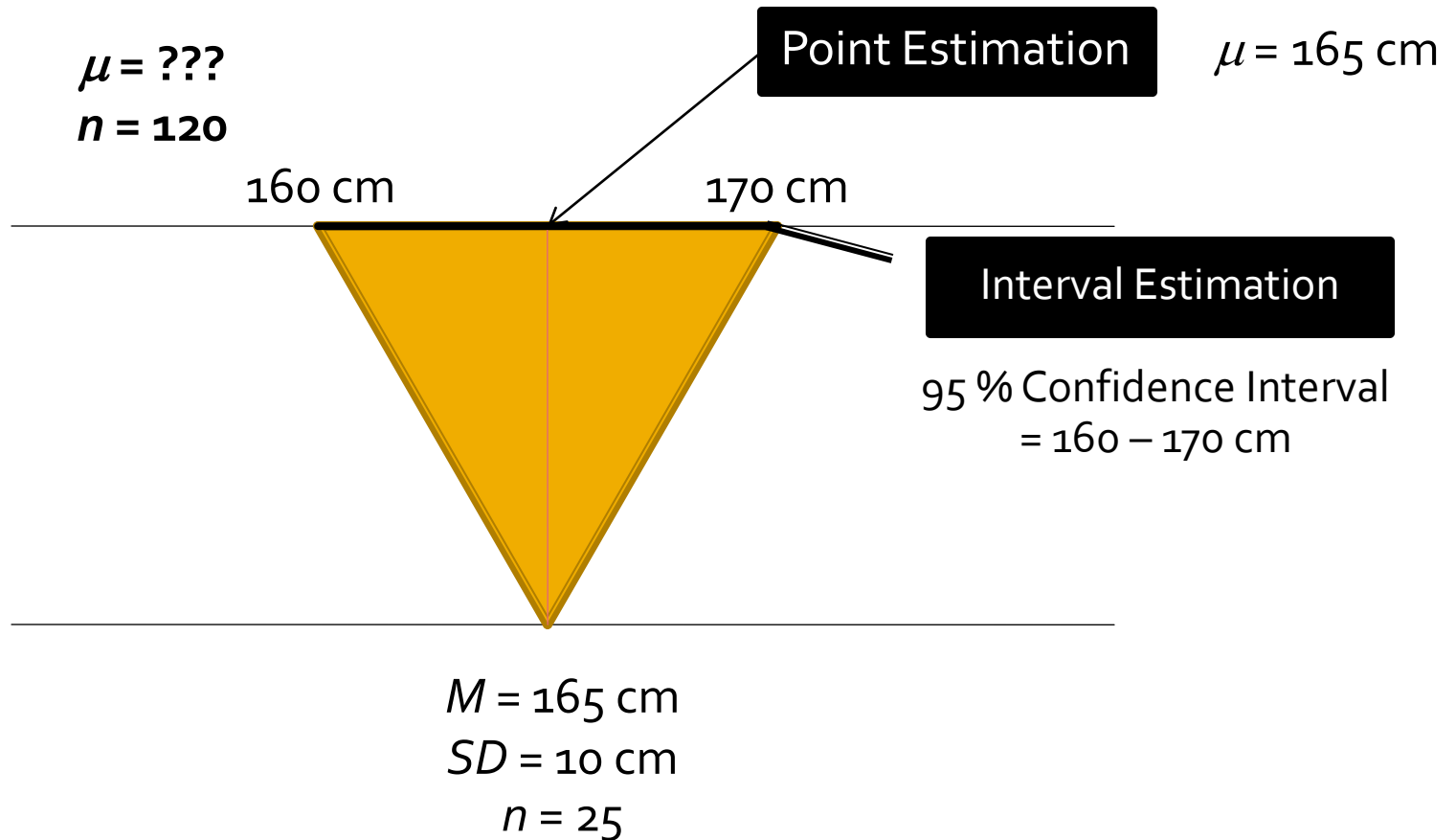 - T-score
  - Deviation IQ
  - Stanine

Correlation

- Scatterplot
- Pearson's Correlation
  - Negative, No, Positive Correlation
- Prediction (Regression)

Estimation

- **Point Estimation**
- **Interval Estimation**

Parameter

Point Estimation

Interval Estimation

95 % Confidence Interval

Statistics

Estimation

μ = ???

n = 120

160 cm

170 cm

Point Estimation

μ = 165 cm

Interval Estimation

95 % Confidence Interval
= 160 – 170 cm

M = 165 cm
SD = 10 cm
n = 25

Reading List

- Chumporn (2004) Unit 2 (pp. 31-42) and Unit 5
- Shultz & Whitney (2005) Unit 2
  - Read & Answer: Case 2.1, 2.2
  - Practicing: Exercise 2.1, 2.2, 2.3, 2.4
- Bring Laptop to the class