

1  Intelligence Testing

2  French Pioneers in Special Education

- Jean Itard
- Edward Seguin
- Alfred Binet
- Theodore Simon.

3  Jean Itard (1775-1838)

4  Jean Itard

- Lived 1775-1838
- Teacher of deaf children and adults
- Worked with Victor, “Wild Boy of Aveyron”.

5  Victor (the “Wild Boy of Aveyron”)

- Feral child observed with wolves
- Apparently age 10
- Worked with him 2 years
- No productive language but responsive; understood, could learn tasks (including some reading)
- Probably abandoned because mentally retarded.

6  Edward Seguin (1812-1880)

7  Edward Seguin

- Lived 1812-1880
- Worked with mentally retarded children
- “Physiological method” of training; stressed motor training and control
- 1837 established first school for MR
- 1848 Emigrated to US
- Seguin form board (replace 10 pieces into board; timed test)
- Active in fund raising for treatment of MR.

8  Example of form board (not exact image of Seguin)

9  Alfred Binet (1857-1911)

10  Alfred Binet – Early Career

- Born Nice, France, 1857, to wealthy physician and artist
- Became lawyer; attended medical school
- Influenced by J.S. Mill
- Worked at Salpetriere Hospital with Jean Martin Charcot (1825-1893) on

hypnosis

- Ideal “Types” representing an illness, studied in detail
- Went to Sorbonne lab, 1891.

11  **Binet – Interest in Intelligence**

- Studied own kids; identified utilitarian thought
- “Individual Psychology” involving in depth study of a few cases.

12  **Binet – Early theoretical approach**

- Faculties (memory, imagery, imagination, attention, comprehension, suggestibility, aesthetic sentiment, moral sentiment, muscular strength, willpower, motor ability, hand-eye coordination)
- Research didn’t support (Stella Sharp @ Cornell, 1899).

13  **Binet’s Work on Intelligence**

- 1899 becomes leader of the Free Society for the Psychological Study of the Child
- Commission to improve diagnosis (idiots, imbeciles, debiles / morons)
- Theodore Simon (1873-1961) goes to work with Binet, 1899 (Intern @ institution for MR).

14  **Binet at work**

15  **Simon, with patient**

16  **Binet (and Simon) tests**

- <http://psychclassics.yorku.ca/Binet/binet1.htm>
- 1905 Test-30 tasks, increasing difficulty. 50 normal kids of varying age, 45 MR
- 1908 Revision 58 items, ages 3-13
- 1911 Revision 5 items for each age, extended to age 15 and adult
- Employed measure of Mental Age
- “Mental orthopedics” exercises to raise intelligence.

17  **Binet-Simon (1905) Items Descriptions**

- 1. Visual following (moving match)
- 2. Pick up objects (to mouth)
- 3. Grab object
- 4. Eat only edible objects
- 5. Unwrap candy
- 6. Follow simple commands
- 7. Name objects
- ...
- 28. Reverse hands of clock
- 29. Paper cutting
- 30. Definition of abstract terms.

18  **Stanford-Binet 5 test kit**

19  **Emergence of I.Q. testing**

- Binet reported Mental Age scores

- Stern suggests use of ratio I.Q.
- Terman translates Binet, standardizes I.Q. (1916)
- Yerkes develops Army Alpha, Beta (WWI)
- Goddard tests immigrants (post WWI).

20  Hereditarian Views and Intelligence Testing

- Galton's pioneering work suggested heritability of (sensorimotor) intelligence
- Goddard attributes mental retardation to genetic mechanisms
- Spearman develops factor analysis, identifies general and specific factors
- Subsequent factor analytic research.

21  Continued Controversy

- Goddard exposed as biased
- Cyril Burt and heritability estimates
- Arthur Jensen
- Herrnstein & Murray ("The Bell Curve")
- Modern alternative conceptions of intelligence
  - Gardner (Multiple intelligences)
  - Sternberg (Triarchic theory)
  - Goleman (Social intelligence).

22  Resemblance in I.Q. Scores

23  Raven's Progressive Matrices (allegedly culture-fair test)

24  Cyril Burt (1883-1971)

25  Arthur Jensen, with protesters in late 1960's

26  Richard Herrnstein (1930-1994) & Charles Murray (1943)

27  Murray & Herrnstein's "The Bell Curve" (1994)

- General premise of book: Intelligence causes success in society
- Attributes racial and socioeconomic differences to genetic mechanisms
- Continues long record of hereditarian views going back to Galton and beyond
- Heated debate regarding implications for social policy.

28  William Stern (1871-1938)

29  William Stern

- German; 1871-1938
- Like Binet, viewed intelligence as general capacity consciously to adjust thought to new requirements, i.e., mental adaptability
- Teleological comparisons are meaningful (level of success) though phenomenological comparisons are not
- Stressed individual nature of human capabilities, (like G. W. Allport, his student).

30  Stern and the Intelligence Quotient

- Advocated measure of the relative difference in intelligence

- Introduced the “Intelligence Quotient” (mental age / chronological age)
- (note no multiplication by 100 as later).

31  Henry Herbert Goddard (1866-1957)

32  Henry Herbert Goddard - Biographical sketch

- born rural Pennsylvania, 1866; died 1957
- B.A., M.A. Haverford College; became H.S. principal; Ph.D. under Hall at Clark Univ., 1899 (on faith healing)
- Taught at West Chester State Teacher’s College
- Director of Research at Training School for the Feebleminded, Vineland, NJ (1906)
- Became Professor of Clinical Psychology at Ohio State Univ., 1922.

33  Goddard’s Work

- Supervised English translation of Binet’s final scale, 1916
- Introduced term “moron”
- Influenced by genetics; assumed mental retardation reflected recessive genetic disorder.

34  Goddard’s Eugenics Activity

- Leader of Eugenics movement in America
- *The Kallikak Family: A Study in the Heredity of Feeble-Mindedness*, 1912. Book included doctored photographs and selective data
- Gave Binet tests to immigrants at Ellis Island; Found high percentage of morons.

35  Altered Kallikak photo #1

36  Altered Kallikak photo #2

37  Nonaltered Kallikak photo

38  Lewis Madison Terman (1877-1956)

39  Lewis Madison Terman - Biographical sketch (Childhood)

- born rural Indiana, 1877; died 1956
- childhood genius, self educated
- entered Central Normal College at 15; teacher at 17
- age 21 earned 3 Bachelors degrees. M.A. at Indiana Univ.

40  Terman adult biographical

- Doctoral work under Hall at Clark; Ph.D. '06(?)
- Prof. @ L.A. State Normal School, then (1910) Stanford Univ.
- APA President, 1923.

41  Terman’s Work - I - Dissertation

- Dissertation *Genius and stupidity: A study of the intellectual processes of seven*

*'bright' and seven 'stupid' boys.*

- Unaware of Binet, but developed similar tests.
- Impressed at overlap, but took hereditarian viewpoint..

42  **Terman's Work – II Translates Binet**

- 1916: Stanford Revision of the Binet-Simon Scale.
- Translation of Binet's scale, Standardization of 2300 American children
- Introduced (ratio) I.Q. = (MA/CA) x 100.

43  **Terman's Work - III – Genius children**

- Work with Catherine Cox (*The early mental traits of three hundred geniuses*, 1926)
- Examined biographies of geniuses
- Estimated average childhood IQ of 155.

44  **Terman's Work – IV – Gifted children**

- Longitudinal study of gifted children
  - Tested 250,000 California children with Stanford Binet
  - Identified 1500 with I.Q. > 140
  - Examined social, personality characteristics
  - Followups in 1929, 1950, 1955, 1960, 1972, continuing
- Dismissed the “early ripe, early rot” hypothesis.

45  **Robert M. Yerkes (1876-1956)**

46  **Robert Mearns Yerkes - Biographical Sketch**

- born rural Pennsylvania, 1876; died 1956
- B.A. Ursinis College, Collegeville, PA. Attended Harvard in biology, received Ph.D. 1902 in Psychology. Animal research.
- On faculty at Harvard (protege of Munsterberg).

47  **Yerkes – Intelligence testing**

- Director of Psychological Research, Boston State Psychopathic Hospital. Gave intelligence tests
- Pres. of APA in 1917
- Key figure in WWI army testing program (1,750,000 men by end of war).

48  **Yerkes – Army Alpha**

- Argued for development of a point-scale
- Army Alpha: Test battery
  - Arithmetic problems
  - Word pairs rated as synonyms or opposites
  - number sequences to complete
  - multiple-choice questions of general information, common sense
  - scrambled word lists.

49  **Yerkes – Army Beta**

- Army Beta: Nonverbal test
  - Trace mazes
  - Find missing element in pictures
  - Fitting together geometric forms
  - Symbol/number substitution.

50  Army Beta (Example of culturally biased content)

51  Yerkes – After WWI

- Published *Psychological Examining in the United States Army* (1921).
- Strongly influenced Carl Brigham's (1923) *A study of American Intelligence*.
- Brigham supported Goddard's eugenics movement, immigration restrictions.

52  Charles Spearman

53  Charles Spearman

- British; 1863-1945
- Army officer
- Ph.D. with Wundt, 1904. Influenced by Galton
- Developed hereditarian theory of intelligence
- Became active in British Eugenics Society.

54  Spearman's work

- Found moderate correlations across domains
- Discovered concept of attenuation due to reliability
- Invented Principal Components factor analysis

55  Spearman's 2-Factor Theory

- Two-factor theory of intelligence
  - g: general factor, determined by heredity
  - s: specific factors, partly learned.

56  Spearman's work prompts other Factor Analytic Research: David Wechsler(1896-1981)

- Verbal I.Q.
- Performance I.Q.

57  Other Factor Analytic Research: L. L. Thurstone (1887-1955)

- (7) Primary Mental Abilities

58  J. P. Guilford's (1897-1988) Structure of Intellect Model

59  End of this topic