

Modern Tests of Mental Abilities

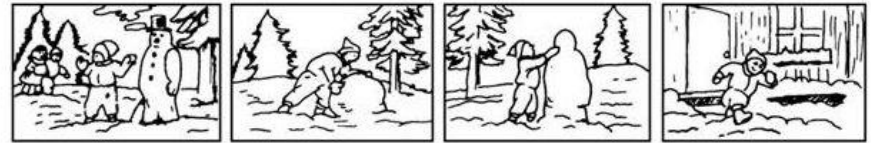
- Wechsler Adult Intelligence Scale (WAIS) consists of 11 subtests and cues us in to strengths by using.....

Factor Analysis

- Later - Wechsler Intelligence Scale for Children (WISC), an intelligence test for preschoolers.

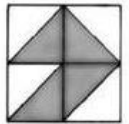
Picture Arrangement

The pictures below tell a story. Put them in the right order to tell the story.



Block Design

Using the four blocks, make one just like this.



Object Assembly

If these pieces are put together correctly, they will make something. Go ahead and put them together as quickly as you can.



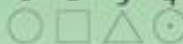





Digit-Symbol Substitution

Code					
	1	2	3	4	5

Test

1	5	4	2	1	3	5	4	1	5

Wechsler Adult Intelligence Scale (WAIS)

Test	Description	Example
Verbal scale		
Information	Taps general range of information	On what continent is France?
Comprehension	Tests understanding of social conventions and ability to evaluate past experience	Why are children required to go to school?
Arithmetic	Tests arithmetic reasoning through verbal problems	How many hours will it take to drive 150 miles at 50 miles per hour?
Similarities	Asks in what way certain objects or concepts are similar; measures abstract thinking	How are a calculator and a typewriter alike?
Digit span	Tests attention and rote memory by orally presenting series of digits to be repeated forward or backward	Repeat the following numbers backward: 2 4 3 5 1 8 6
Vocabulary	Tests ability to define increasingly difficult words	What does audacity mean?
Performance scale		
Digit symbol	Tests speed of learning through timed coding tasks in which numbers must be associated with marks of various shapes	Shown: 1 2 3 4  Fill in: 1 4 3 2 
Picture completion	Tests visual alertness and visual memory through presentation of an incompletely drawn figure; the missing part must be discovered and named	Tell me what is missing: 
Block design	Tests ability to perceive and analyze patterns by presenting designs that must be copied with blocks	Assemble blocks to match this design: 
Picture arrangement	Tests understanding of social situations through a series of comic-strip-type pictures that must be arranged in the right sequence to tell a story	Put the pictures in the right order: 
Object assembly	Tests ability to deal with part/whole relationships by presenting puzzle pieces that must be assembled to form a complete object	Assemble the pieces into a complete object: 

Assessing Intelligence: Sample Subscores from the WAIS

VERBAL

General Information
Similarities
Arithmetic Reasoning
Vocabulary
Comprehension
Digit Span

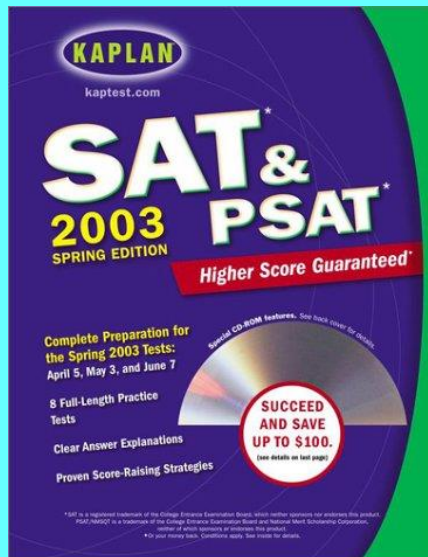
PERFORMANCE

Picture Completion
Picture Arrangement
Block Design
Object Assembly
Digit-Symbol Substitution

Aptitude v. Achievement Tests

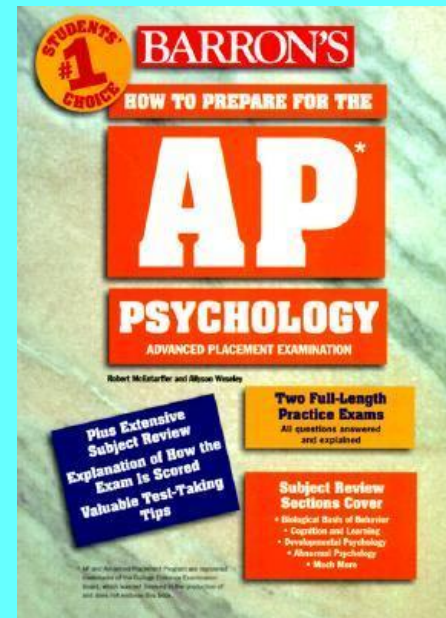
Aptitude

- A test designed to predict a person's future performance.
- The ability for that person to learn.



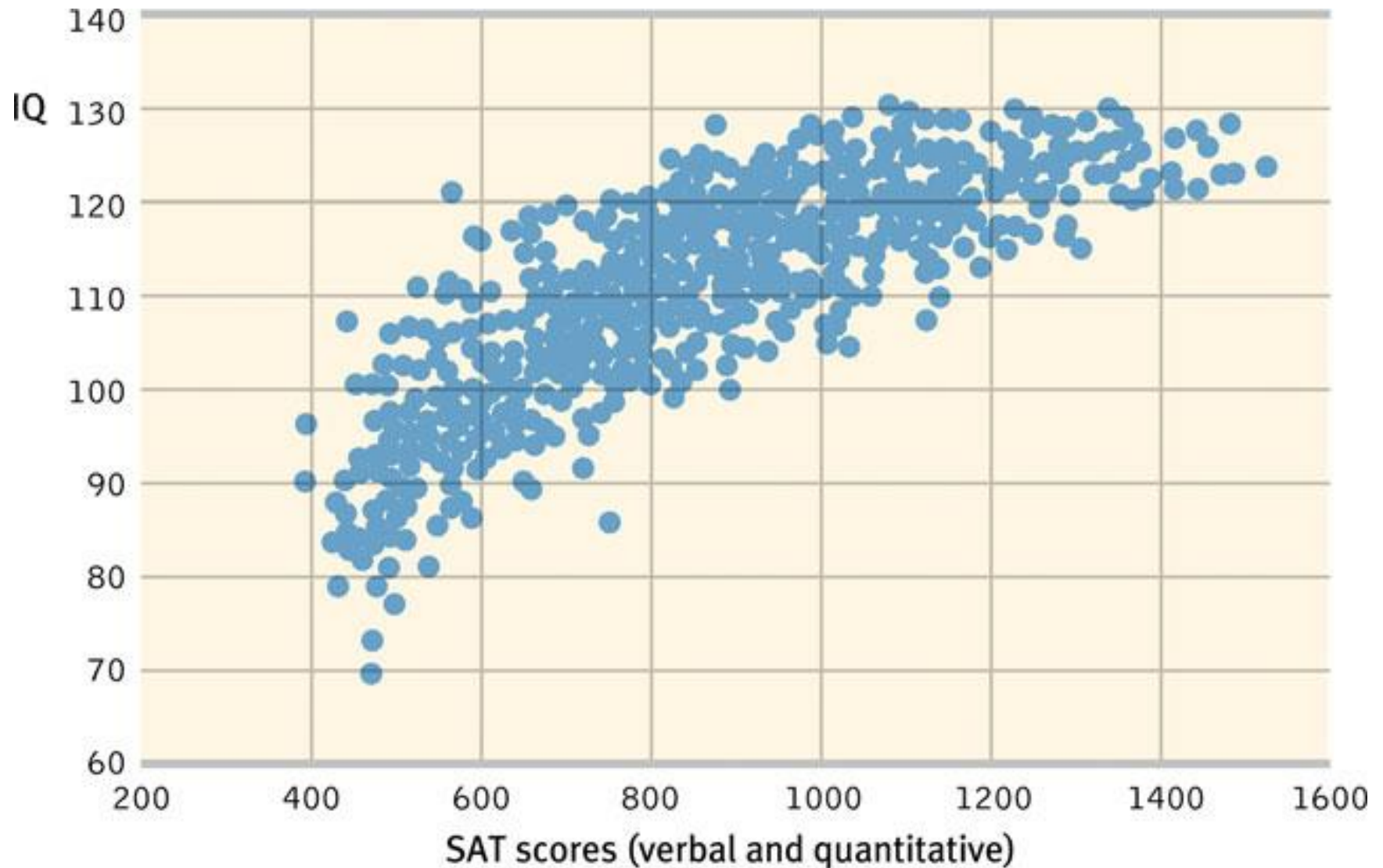
Achievement

- A test designed to assess what a person has learned.



Q: What is the correlation between SAT scores and IQ scores?

Aptitude and Achievement Tests



What are the 3 most important considerations when testing?



How do we construct Intelligence tests?

Tests must be:

- Valid
- Reliable
- Standardized

Validity & Reliability

Validity: The extent to which a test measures what it is supposed to measure.

- *Content Validity*: does the test sample an activity of interest?
- *Predictive Validity*: does the test accurately predict future behavior?



Reliability: The extent which a test yields consistent results over time.

Reliability

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Test-Retest Reliability

- Administering the same test to the same set of examinees on two separate occasions.

Questionnaire (Completed 9/20)

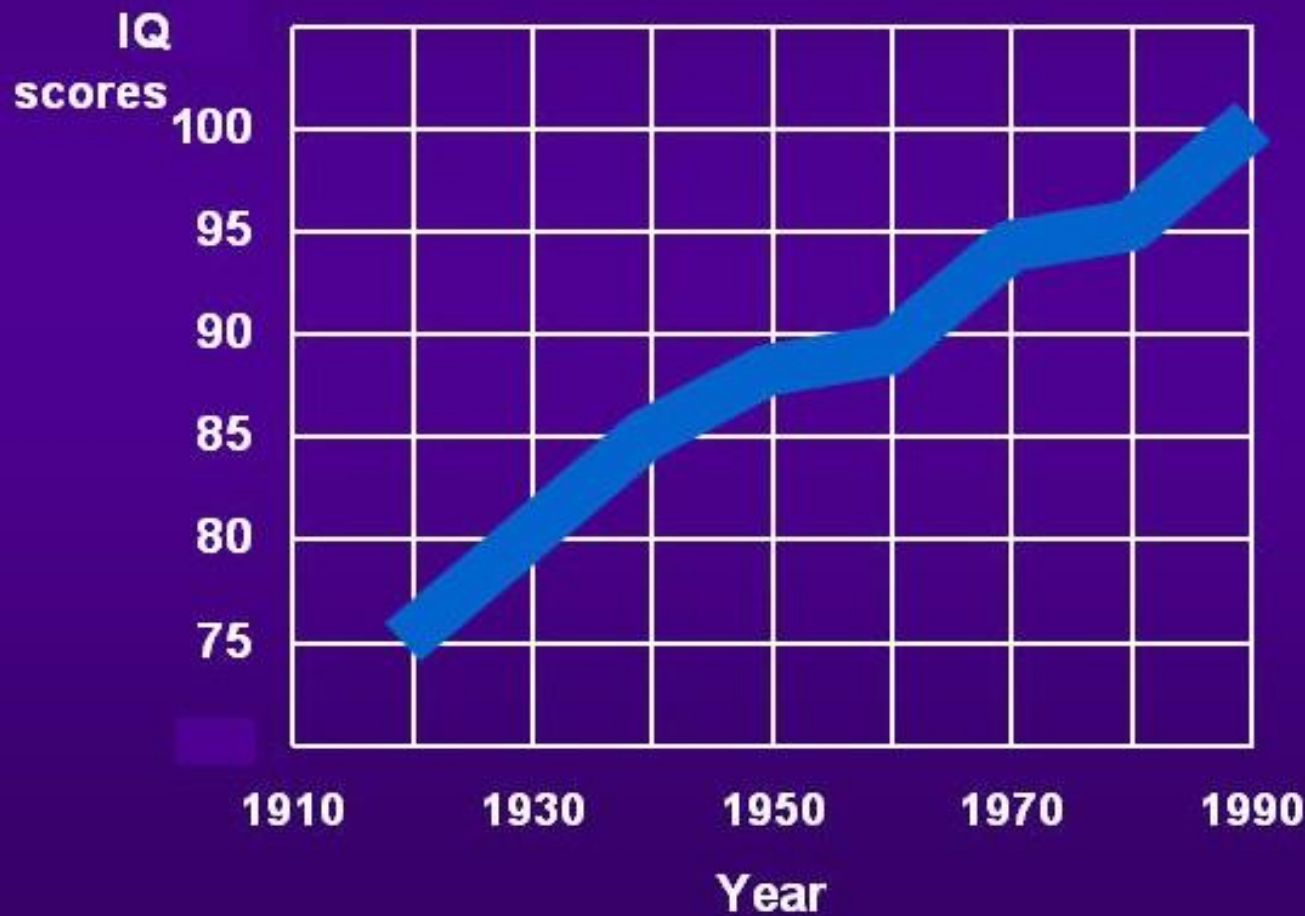
- 4 I feel I do not have much proud of.
- 3 On the whole, I am satisfied with myself
- 2 I certainly feel useless at times
- 1 At times I think I am no good at all
- 4 I have a number of good qualities
- 3 I am able to do things as well as others

Questionnaire (Completed 9/27)

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Standardization

- Defining uniform testing procedures and scores by comparing scores to a pre-tested group.
- Tests like WAIS are periodically re-standardized. (The average intelligence score in 1920 would only score a 76 by today's standard.)
- This also helps to eradicate biases due to gender, race, culture, socio-economic status, special-needs, etc.



Flynn Effect:

- Performance on IQ scores has steadily increased over generations

Perhaps due to better nutrition, living standards, educational opportunities, and more recently, technology, general intelligence is increasing.

Does Intelligence Change Over Time?

- By age 3, a child's IQ can predict adolescent IQ scores.
- Depends on the type of intelligence, crystallized or fluid.



What is fluid intelligence?

- Our ability to learn new things, like technology.



Our ability to reason quickly and abstractly, such as when solving logic problems

What is crystallized intelligence?

- Old people intelligence, ability to relate information to past experiences.



One's accumulated knowledge, including vocabulary, that has built up over a lifetime.

Extremes of Intelligence

- Intellectual disability (formerly mental retardation,) requires meeting 2 criteria:
 - Low test score AND difficulty adapting to normal demands of independent living
- 1% of the population meets this criteria
- Males outnumber females by 50%

- **Down Syndrome**

- Intellectual disability and associated physical disorders caused by an extra chromosome in one's genetic makeup



Extremes of Intelligence

- Intellectual Disability (formerly mental retardation)
 - Refers to sub-average general mental ability (IQ<70-75) accompanied by deficits in adaptive skills, originating before 18.
 - Disability may be mild, moderate, severe, or profound. (85% are mild)
 - Many organic conditions can cause this disability, but a specific organic cause can be identified in only about 25% of cases
 - Cases of unknown origin tend to involve mild levels of disability and are believed to be mainly caused by unfavorable environmental factors.

TABLE 11.3**DEGREES OF MENTAL RETARDATION**

Level	Approximate Intelligence Scores	Percentage of Persons with Retardation	Adaptation to Demands of Life
Mild	50–70	85%	May learn academic skills up to sixth-grade level. Adults may, with assistance, achieve self-supporting social and vocational skills.
Moderate	35–50	10%	May progress to second-grade level academically. Adults may contribute to their own support by laboring in sheltered workshops.
Severe	20–35	3–4%	May learn to talk and to perform simple work tasks under close supervision but are generally unable to profit from vocational training.
Profound	Below 20	1–2%	Require constant aid and supervision.

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Table 11.3

Myers: Psychology, Eighth Edition
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Extremes of Intelligence

Sho Yano was playing Mozart by 4, aced the SAT at 8, and graduated summa cum laude from Loyola University at age 12. He then began PhD-MD studies at the University of Chicago



Extremes of Intelligence

- Giftedness
 - In practice, efforts to identify gifted children focus almost exclusively on IQ scores, with a score of 130 as the typical minimum.
 - For the most part, gifted children tend to be above average in social and emotional maturity.
 - Although gifted children tend to be successful in life, very few go on to make genius-level contributions.
 - Gifted programs have created controversy

Gender Differences

Three people were hiking through a forest when they came upon a large, raging violent river.

Needing to get on the other side, the first man prayed, "God, please give me the strength to cross the river."

Poof! God gave him big arms and strong legs and he was able to swim across in about 2 hours, having almost drowned twice.

After witnessing that, the second man prayed, "God, please give me strength and the tools to cross the river."

Poof! God gave him a rowboat and strong arms and strong legs and he was able to row across in about an hour after almost capsizing once.

Seeing what happened to the first two men, the third man prayed, "God, please give me the strength, the tools and the intelligence to cross river."

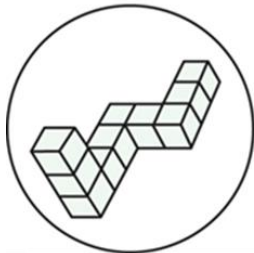
Poof! He was turned into a woman. She checked the map, hiked one hundred yards up stream and walked across the bridge.

Group Differences

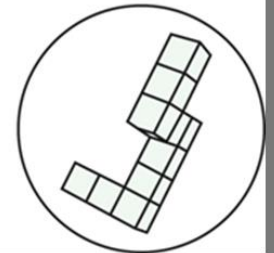
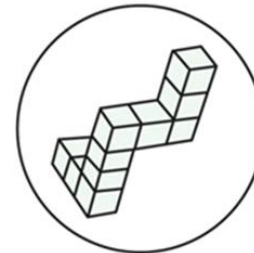
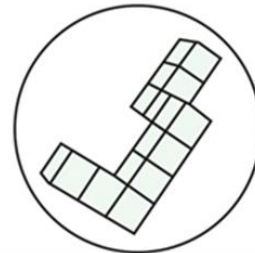
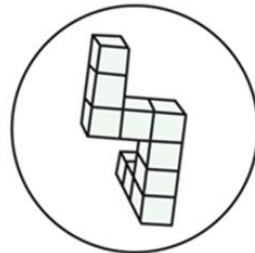
- **Gender Similarities & Differences**
- Girls are better spellers
- Boys outnumber girls at the low extremes.
- Boys tend to talk later and stutter more often.
- In remedial reading classes, boys outnumber girls 3 to 1.
- In high school, underachieving boys outnumber girls 2 to 1.
- Women are better at detecting emotions than men.
- Who is better at math?

Which two circles contain a configuration of blocks identical to the one in the circle at the left?

Standard



Alternatives

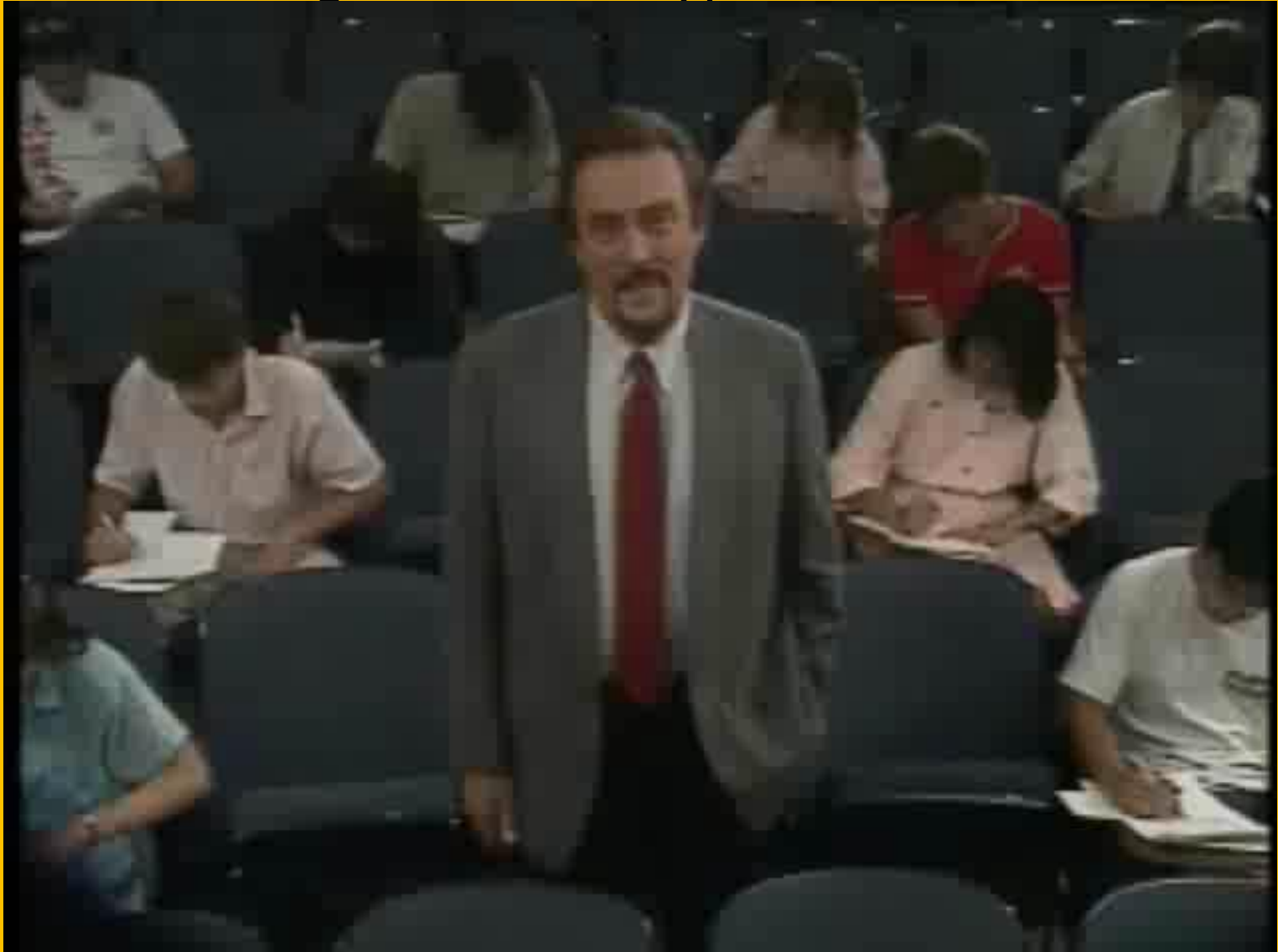


Racial Difference in IQ

- Racial difference in average IQ among different racial groups can be measured
- More variation in IQ scores within a particular group than between groups

Claude Steele - Stereotype Threat

- A self-confirming concern that one will be evaluated based on a negative stereotype



Test Bias?

- Most experts would agree that intelligence tests are "biased" in the sense that test performance is influenced by cultural experiences.
- But some argue that their sole purpose is to discriminate, but we have to consider the type of discrimination.