

What a Nonverbal Ability Test Is ... and Isn't

Jack A. Naglieri, Ph.D.

Research Professor, University of Virginia

Senior Research Scientist, Devereux Center for Resilient Children

jnaglieri@gmail.com

www.jacknaglieri.com

"Do not go where the path may lead, go instead where there is no path and leave a trail." Ralph Waldo Emerson

Slides by Jack A. Naglieri, Ph.D. (jnaglieri@gmail.com)

1

www.jacknaglieri.com

<https://www.facebook.com/NaglieriNonverbalAbilityTest>

- ▶ General information, presentation handouts, copies of published research and book chapters and to ask a question see my Facebook and web page.

JACKNAGLIERI.COM
ASSESSMENT TOOLS FOR PSYCHOLOGISTS AND EDUCATORS

HOME ABOUT PUBLICATIONS TESTS HANDOUTS & RESEARCH BY TEST TESTIMONIALS CONTACT

EF Comprehensive Executive Function Inventory

CAS2 Cognitive Assessment System

DESSA DESSA - DIRECT EMOTIONAL REGULATION SKILLS ASSESSMENT

DESSA-MINI DESSA - MINI DIRECT EMOTIONAL REGULATION SKILLS ASSESSMENT

ALTRISM & SETTING SCALES (ALTS)

Gama

NAT-2 Naglieri Nonverbal Ability Test

Devereux Scales of Mental Health

ABOUT
Jack A. Naglieri, Ph.D., is Research Professor at the Curry School of Education at the University of Virginia, Senior Research Scientist at the Devereux Center for Resilient Children and Emeritus Professor of Psychology at George Mason University.

PUBLICATIONS
The author of more than 200 publications, his recent efforts include cognitive assessment, cognitive intervention, IAD determination and measurement of psychopathology and resilience.

TESTS
A comprehensive list of Jack A. Naglieri's tests such as the Naglieri Nonverbal Ability Test and the Comprehensive Executive Function Inventory (CEFI).

RESOURCES
Download a PDF of Handouts of past presentations on various topics and research by Jack A. Naglieri.

Naglieri Nonverbal Ability Test
Manual Product/Service

Timeline

Accept friend's invitation to show your support for this Page

Accept friend's invitation to show your support for this Page

Post: Please be searching about for education and development

Post: What a Nonverbal Ability Test Is... And Isn't

Post: What a Nonverbal Ability Test Is... And Isn't

Conclusions : IQ Fundamental Flaw

- Although IQ tests have been criticized, especially regarding issues of test bias, few understand that these tests are fundamentally flawed because of their reliance on *knowledge*
- *The result:*
 - Students who come from low income families, are culturally different, and have limited English proficient are not assessed accurately
 - And they don't reach their potential because they are denied gifted education

Slides by Jack A. Naglieri, Ph.D. (jnaglieri@gmail.com)

Conclusions

3

Nonverbal Tests

Getting the Big Picture

4

Wall Street Journal

THE WALL STREET JOURNAL.
© 2003 Dow Jones & Company. All Rights Reserved.
MONDAY, DECEMBER 29, 2003 - VOL. CCXLII NO. 126 - ***** \$1.00

Brain Drain
Initiative to Leave No Child Behind Leaves Out Gifted

Educators Divert Resources From Classes for Smartest To Focus on Basic Literacy

Blow to Bright Minority Kids

By DANIEL GOLDEN

SPRINGFIELD, Ill.—To make sure even the most disadvantaged students learn the three R's, Congress two years ago passed a law known as No Child Left Behind. National test scores suggest it is indeed helping the weakest students. There's just one problem: It may be leaving behind some of the strongest.

The 2001 law, championed by the Bush administration, calls for all public-school students to be proficient in reading and math by 2004. Schools must make steady progress toward these goals. They face penalties if they don't continually raise their proportion of proficient students, both overall and within various racial and other categories. Schools that miss milestones can be required to pay for outside tutors and let parents transfer children elsewhere.

But a school faces no penalty if top students fail off as long as they remain profi-

What's News—
Business and Finance World-Wide

■ **U.S. AND OTHER AID POKERED INTO BAN.** Iraq's quake-blasted city, Death toll estimates passed 22,000 after the 6.5-magnitude temblor hit the region of mud-brick structures. Friday and afterwards tumbled much of what initially survived. As many as 30,000 are injured and 100,000 are homeless. Despite policy divisions, the Bush administration dispatched seven platoons of rescue workers and supplies. Such "earthquake diplomacy" can heal enmity. (Page A1)

■ **LOAF OF HONESTY IN THE FIVE CLOCKS.** A mass of cross-bred seals, leopards, meerkats and crows that lay along the ancient Silk Road. Part of the map dated back 2,000 years.

■ **ROADSIDE BOMBS KILLED TWO U.S. SOLDIERS AND TWO IRAQI CHILDREN** in and near Baghdad. On Saturday, a series of coordinated suicide attacks in Iraq killed five Iraqis and two U.S. troops, including policemen. Four Americans died Friday. Japan said it would give most of what Iraq owes it if other Persian Gulf nations do likewise.

■ **North Korea confirmed it is willing to hold a fresh round of nuclear crisis talks with the U.S. and four other nations early in 2004.** The announcement came in a weaker vein by a high-level Chinese diplomat.

■ **The chief U.S. attorney is expected to announce** his strategy for prosecuting the 2001-02 scandal.

■ **Polish law will go ahead with next week's** proposed law on organized

Project at Mint Draws Complaints From Many Quarters

Commemorative State Coins, Meant to Spur Collecting, Inspire Free-for-Alls

By BROOKS BARNES

Heads, it's George Washington. Tails, it's Franklin D. Roosevelt. These days, a growing number of two-bit bottles are rattling the sleepy U.S. Mint. The federal agency's commemorative quarters program, a pocket-change salute to the 50 states, has stirred politicians, tourism officials and artists against each other in branding battles. Launched in 1999 as a benign patriotic



The Wisconsin quarter (above) that the Mint will issue next year. The design selected by a state panel might have stirred at the 11th hour, prompting controversy.

■ **Michigan to revive coin-collecting.** It's instead spurring fervent spats over custody of American coins and how states define themselves.

■ **The question in Texas:** Remember the Alamo—or the nine-headed arm-

Business Ties Many Companies Transactions With 'Related Party' Deals Disclosed

By 300 Large Corporations; Potential for Conflict

Legacy of Family Ownership

By JOHN R. ENHOFER

Before the midsize deals that would shake the market, one fully into focus, then Chief Executive Kenneth Lay was asked in August 2001 about a suspicious-looking arrangement: two partnerships run and partly owned by then-Chief Financial Officer Andrew Fastow that did significant business with Enron itself.

Wasn't there a glaring conflict of interest in Mr. Fastow acting on behalf of the huge energy concern and his own partnership in business deals totaling hundreds of millions of dollars?

Almost all big companies have related party transactions, Mr. Lay said. He was right about that. Consider:

■ **A.L. Lear Corp.,** a large Southfield, Mich.-based auto-parts supplier, 17 relatives of senior officials are employed by or have business ties to the company, a group of family ties that the company failed to report until late last year de-Mich.-based auto-parts supplier, 17 relatives of senior officials are employed by or have business ties to the company, a group of family ties that the company

Wall Street Journal

- Devion lives with his mother and father and two siblings in Springfield, Illinois
- The family has an annual income of \$12,000
- Both parents have high-school equivalency diplomas
- Devion's father, Steven, was recently laid off from a bookbinding job

Conclusions

Wall Street Journal

- Seven-year-old Devion Ross lives in a ramshackle house opposite a pawnshop
- He and an older brother recently slept several nights on bare mattresses in a front room because a raccoon had gnawed through their bedroom ceiling



Conclusions

7

Wall Street Journal

- At home, Devion often reads or does word puzzles while his friends play outside.
- He is writing a book of several chapters using the family's 10-year-old computer, which was bought second-hand for \$100. It has a broken mouse.
- "I like to read books all day long," he says. "I'm the only one I know that writes stories. It's a special secret I keep."

Conclusions

8

Wall Street Journal

- Devion attends class in a middle-class white neighborhood, under a desegregation plan
- In kindergarten, he scored **141** out of a possible 150 on the *Naglieri Nonverbal Ability Test*
- Devion's high *Naglieri* score brought him an invitation to attend the magnet school last year
- He was the only African-American at his elementary school to qualify for gifted services
- But there have been problems

Conclusions

9

Wall Street Journal

- His parents didn't follow up on his placement in GT.
- Devion's mother missed the appointment because she was exhausted from working an overnight shift as a caretaker.
- And...
- He has been barred from two field trips because of misbehavior. Mrs. Gruebel says he is "extremely bright, but he's not doing the work he can do" and often doesn't follow directions.

Conclusions

10

Wall Street Journal

- Devion's teacher recently told the class to write to Mickey Mouse, congratulating the cartoon character on his 75th birthday and on being a good role model. "Second-graders have to learn how to write a friendly letter," she said.
- Afterward, Devion said the assignment bored him because he prefers Pokemon to Mickey Mouse: "I could write 100 pages about Pokemon. A whole book."

Conclusions

11

Wall Street Journal

- It is not unusual for smart children like Devion to develop behavior problems and inattention because their intellectual needs aren't met.
- Devion may soon get more instruction that's geared to his ability.

Conclusions

12

Wall Street Journal

- Although the Iles magnet school is so crowded it rarely accepts transfers, after the *Wall Street Journal* began looking at Devion's situation, he was invited to transfer in.
- He started there January 5th, 2004.

Conclusions

13

Helping Gifted Children Learn

- This presentation is about children with may not have the academic skills or command of the English language to do well in school, yet they are very smart – gifted
- These children can become very talented given the opportunity to learn
- There are many children like this in our country, and their numbers are growing

Conclusions

14

Presentation Outline

- ➔ Why do IQ tests follow the Verbal, Quantitative, Nonverbal format?
- What do verbal and nonverbal tests measure?
 - Nonverbal Tests & NNAT
 - Is a nonverbal test effective for screening for gifted students
 - Gifted Ed Discrimination on Trial: Guilty Verdict

Slides by Jack A. Naglieri, Ph.D. (jnaglieri@gmail.com)

Conclusions

15

Origins of Traditional IQ

- April 6, 1917 is remembered as the day the United States entered World War I.

The image shows the front page of The New York Times newspaper from December 8, 1941. The masthead reads "The New York Times" in a large, gothic font. To the right of the masthead is a box labeled "LATE CITY EDITION". Below the masthead, the date "NEW YORK, TUESDAY, DECEMBER 8, 1941" is printed. The main headline is in large, bold, black letters: "U.S. DECLARES WAR, PACIFIC BATTLE WIDENS; MANILA AREA BOMBED; 1,500 DEAD IN HAWAII; HOSTILE PLANES SIGHTED AT SAN FRANCISCO". Below the main headline, there are several smaller headlines and columns of text. On the left, there are headlines like "TURN BACK TO SEA" and "ALARM IS WIDESPREAD". In the center, there are headlines like "Philippines Pounded All Day" and "BATTLESHIP LOST". On the right, there is a large black and white photograph of a man, likely a politician, and a headline "UNITY IN CONGRESS". The overall layout is typical of a newspaper front page from that era.

Origins of Traditional IQ

- On that day same a group of psychologists held a meeting in **Harvard University's Emerson Hall** to discuss the possible role psychologists could play with the war effort (Yerkes, 1921).
- Yerkes, Thorndike, Seashore, Terman, and others...



Slides by Jack A. Naglieri, Ph.D. (jnaglieri@gmail.com)

Conclusions

17

Origins of Traditional IQ

- A group of psychologists met at the Training School in Vineland, New Jersey on May 28, 1917 to identify possible tests
- They considered many options including tests that Lewis Terman's student Arthur S. Otis developed



Lieut. Arthur S. Otis,
Fall, 1917

Slides by Jack A. Naglieri, Ph.D. (jnaglieri@gmail.com)

Conclusions

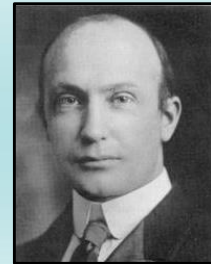
18

Origins of Traditional IQ

- The goal was to find tests that could efficiently evaluate a wide variety of men, be easy to administer and easy to score.
- The tests they assembled were examined in a study involving about 4,000 subjects and the data collected and analyzed by another group including: Woodworth, Thorndike (Chief Statistician), Otis, and Thurstone



E. L. Thorndike



R. Woodworth

Slides by Jack A. Naglieri, Ph.D. (jnaglieri@gmail.com)

Conclusions

19

Origins of Traditional IQ

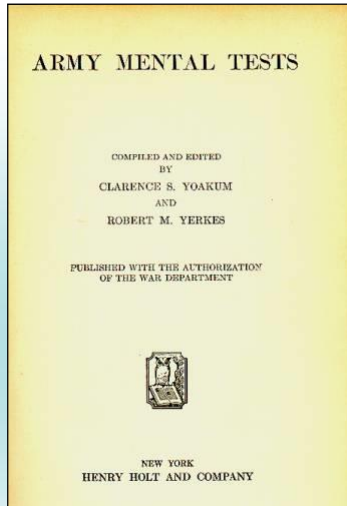
- By July of 1917 the first research study showed that the Alpha and Beta tests could
 - “aid in segregating and eliminating the mentally incompetent,
 - classify men according to their mental ability; and
 - assist in selecting competent men for responsible positions” (p. 19, Yerkes, 1921).
- Thus, **July 20, 1917** is the birth date of the verbal, quantitative, nonverbal IQ test format.

Slides by Jack A. Naglieri, Ph.D. (jnaglieri@gmail.com)

Conclusions

20

IQ's Origins



- Yoakum & Yerkes (1920) summarized the methods used by the military to
 - classify people from many backgrounds by mental capacity

Slides by Jack A. Naglieri, Ph.D. (jnaglieri@gmail.com)

Conclusions

21

1920 Army Testing

- Army Alpha
 - Synonym- Antonym
 - Disarranged Sentences
 - Number Series
 - Arithmetic Problems
 - Analogies
 - Information
- Army Beta
 - Maze
 - Cube Imitation
 - Cube Construction
 - Digit Symbol
 - Pictorial Completion
 - Geometrical Construction

Verbal &
Quantitative

Nonverbal

Conclusions

22

ARMY ALPHA

Slides by Jack A. Naglieri, Ph.D. (jnaglieri@gmail.com)

Conclusions

23

Verbal and Nonverbal

- Now you will take the ***Information*** subtest from the original Alpha (Verbal) IQ test
- There will be 10 questions
- Write your answers to each question
- You will have 60 seconds...
- Ready?
- BEGIN

Conclusions

24

The First IQ TEST: Alpha

- | | |
|---|-------------------|
| 1. Bull Durham is the name of | tobacco |
| 2. The Mackintosh Red is a kind of | fruit |
| 3. The Oliver is a | typewriter |
| 4. A passenger locomotive type is the | Mogul |
| 5. Stone & Webster are well know | engineers |
| 6. The Brooklyn Nationals are called | Superbas |
| 7. Pongee is a | fabric |
| 8. Country Gentleman is a kind of | corn |
| 9. The President during the Spanish War was | Mckinley |
| 10. Fatima is a make of | cigarete |

From: Psychological Examining the United States Army (Yerkes, 1921, p. 213)

Slides by Jack A. Naglieri, Ph.D. (jnaglieri@gmail.com)

Conclusions

25

Army Mental Tests → Information & WISC

No. 1.]

PSYCHOLOGICAL EXAMINING IN THE UNITED STATES ARMY.

213

EXAMINATION a

Test 5 Information.

- 1 The color of fresh snow is white blue brown green
- 2 The ears are used in breathing digestion hearing seeing
- 3 Cows eat mostly meat grass nuts fruit
- 4 Dogs like best to eat grass seeds fruits meat
- 5 Thorns grow on daisies hattercups sun-flowers roses
- 6 Bull Durham is the name of chewing-gum aluminum-ware tobacco clothing
- 7 America was discovered by Drake Hudson Columbus Cabot
- 8 The apple grows on a vine bush tree reed
- 9 Berlin is the capital of Russia Germany England France
- 10 Blood is pumped by the lungs liver heart kidneys
- 11 Molasses is obtained from honey petroleum turpentine sugar-cane
- 12 Bowling is played with rackets cards balls dice
- 13 Baltimore is in Maryland Virginia Pennsylvania Ohio
- 14 St. Paul is in Missouri Minnesota Mississippi Florida

Army Mental Tests → Arithmetic on WISC

TEST 2

Get the answers to these examples as quickly as you can.
Use the side of this page to figure on if you need to.

- | | | | | |
|---------|---|--|--------|--------|
| SAMPLES | { | 1 How many are 5 men and 10 men?..... | Answer | (15) |
| | | 2 If you walk 4 miles an hour for 3 hours, how far do you walk?..... | Answer | (12) |
| | | 1 How many are 40 guns and 6 guns?..... | Answer | (46) |
| | | 2 If you save \$6 a month for 5 months, how much will you save?..... | Answer | (30) |
| | | 3 If 32 men are divided into squads of 8, how many squads will there be?..... | Answer | (4) |
| | | 4 Mike had 11 cigars. He bought 3 more and then smoked 6. How many cigars did he have left?..... | Answer | (8) |
| | | 5 A company advanced 6 miles and retreated 3 miles. How far was it then from its first position?..... | Answer | (3) |
| | | 6 How many hours will it take a truck to go 48 miles at the rate of 4 miles an hour?..... | Answer | (12) |
| | | 7 How many pencils can you buy for 40 cents at the rate of 2 for 5 cents?..... | Answer | (16) |
| | | 8 A regiment marched 40 miles in five days. The first day they marched 9 miles, the second day 6 miles, the third 10 miles, the fourth 9 miles. How many miles did they march the last day?..... | Answer | (16) |
| | | 9 If you buy 2 packages of tobacco at 8 cents each and a pipe for 55 cents, how much change should you get from a two-dollar bill?..... | Answer | (47) |
| | | 10 If it takes 8 men 2 days to dig a 160-foot drain, how many men are needed to dig it in half a day?..... | Answer | (32) |

ARMY MENTAL TESTS

Army Mental Tests - Vocabulary

- | | | |
|---------|---|--|
| SAMPLES | { | sky—blue :: grass—table <u>green</u> warm big |
| | | fish—swims :: man—paper time <u>walks</u> girl |
| | | day—night :: white—red <u>black</u> clear pure |

In each of the lines below, the first two words are related to each other in some way. What you are to do in each line is to see what the relation is between the first two words, and underline the word in heavy type that is related in the same way to the third word. Begin with No. 1 and mark as many sets as you can before time is called.

- | | | |
|---------------|---|----|
| 1 | gun—shoots :: knife—run <u>cuts</u> hat bird..... | 1 |
| 2 | ear—hear :: eye—table <u>hand</u> step play..... | 2 |
| 3 | dress—woman :: feathers— <u>bird</u> neck feet bill..... | 3 |
| 4 | handle—hammer :: knob—key room <u>door</u> step | 4 |
| 5 | shoe—foot :: hat—coat nose <u>head</u> ocular | 5 |
| 6 | water—drink :: bread—cake coffee <u>eat</u> pie..... | 6 |
| 7 | food—man :: gasoline—gas oil <u>automobile</u> spark..... | 7 |
| 8 | eat—fat :: starve— <u>thin</u> food <u>read</u> thirsty..... | 8 |
| 9 | man—home :: bird— <u>fly</u> insect worm <u>nest</u> | 9 |
| 10 | go—come :: sell—leave <u>buy</u> money <u>papers</u> | 10 |
| 11 | peninsula—land :: bay—boats pay <u>ocean</u> Massachusetts..... | 11 |
| 12 | hour—minute :: minute—man <u>work</u> short | 12 |
| 13 | abide—depart :: stay—over home play <u>stage</u> | 13 |
| 14 | January—February :: June— <u>July</u> May month year..... | 14 |
| 15 | bold—timid :: advance— <u>proceed</u> retreat campaign soldier..... | 15 |

216

ARMY MENTAL TESTS

BUT WAIT ! How do IQ and Achievement Tests Differ?

The TRUTH about IQ and
achievement tests...

Slides by Jack A. Naglieri, Ph.D. (jnaglieri@gmail.com)

29

VIQ is Achievement

What does scared mean?
(The child answers orally)

Someone who is glad is

- (a) tall
- (b) proud
- (c) happy
- (d) alone

Wechsler or Binet
Vocabulary item
presented orally by
the examiner:

Stanford Achievement
Test Reading
Vocabulary

Conclusions

VIQ is Achievement

“A boy had twelve books and sold five. How many books did he have left?”

Stanford-Binet 5th Ed.
Quantitative items

Peter counted seventeen lily pads at the pond. There were frogs sitting on five of the lily pads, and the rest were empty. How many lily pads were empty?

(a) 22 (b) 13 (c) 12

Stanford Achievement Test
Math item

Conclusions

CogAT Form 6 Level D Verbal

➤ CogAT Verbal Classification

- Which answer goes with the words “red, brown, yellow”

A color
B crayon
C paint
D green
E marker

■ ITBS Vocabulary test

- Select the answer that has the same meaning as the target word.
- “To peek in the box”
 - A push
 - B stand
 - C break
 - D look

CogAT Sentence Completion

- The child reads a sentence and selects an option that completes the meaning

Birds _____ in the sky”

A nest

C swim

B fly

D float

- This is **also** a vocabulary test
- And, these questions require reading
- What level of reading is required?

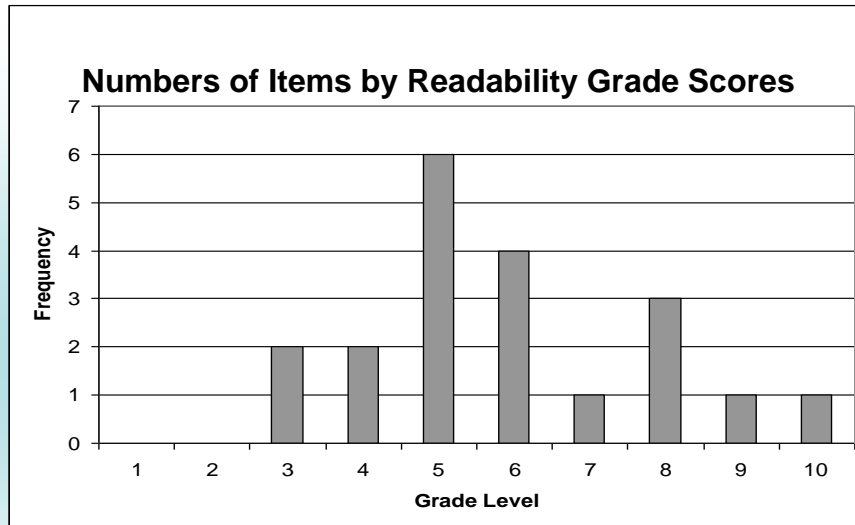
Conclusions

CogAt Sentence Completion

- CogAT Form D Level 6 is intended for children in grades 5 and 6
- The Sentence Completion test readability grade level is 6.1 (range 3.7 - 10.4) using Flesch-Kincaid readability formula
- 80% of the items have readability values of grade 5 or more!

Conclusions

CogAt Sentence Completion for Grades 5+6



Conclusions

CogAt and ITBS Math

- The CogAT Equation Building test demands basic math skills to determine how numbers and symbols can be combined to yield a specific numerical value
 - $7 \times 4 = ?$
 - $15 + 4 - 6 + 2 = ?$
- ITBS Math Concepts also involves equations
 - the student is given a math problem and asked to select which of four possible equations can be used to answer the question

Conclusions

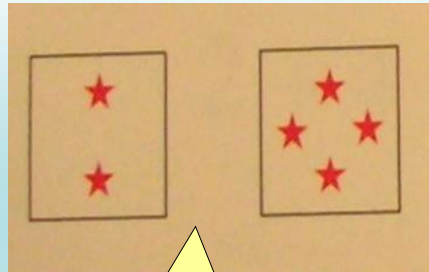
Quantitative Ability or Achievement?

- “Neal had five marbles. Then his mother gave him three more marbles. How many marble did he have then?”



Wechsler Individual Achievement Numerical Operations Subtest

- “How many stars are there all together?”



Stanford-Binet 5 Quantitative Reasoning

Quantitative Ability or Achievement?

- “Drinks and snacks cost money. Show me how much money these drinks and snacks would cost.”



Stanford-Binet 5 Quantitative Reasoning

- “If you bought both balls and you had this much money, how much money would you have left?”



WJ-III ACH Applied Problems

The Same Arithmetic Item!

Stanford-Binet 5
Quantitative
Reasoning

Woodcock
Johnson-III
Achievement
Math Fluency
subtest

WIAT-II
Numerical
Operations

Ability or Achievement ?

Woodcock-Johnson® III
Tests of Cognitive Abilities W|J™
Richard W. Woodcock Kevin S. McGrew

Extended Test Book
Tests 11-20

Woodcock-Johnson® III
Tests of Achievement W|J™
Richard W. Woodcock Kevin S. McGrew Nancy Mather

Extended Test Book
Tests 13-22
Form A

Which is Ability and which is Achievement?

<p>Test 14 Picture Vocabulary</p> <p>Scoring</p> <ul style="list-style-type: none"> 1 = Correct response 	<p>Test 1A Verbal Comprehension–Picture Vocabulary</p> <p>Administration Overview</p> <ul style="list-style-type: none"> Test 1 Verbal Comprehension is comprised of four subtests—1A Picture Vocabulary, 1B Synonyms, 1C Antonyms, and 1D Verbal Analogies. You must administer all four subtests to obtain a score for Test 1 Verbal Comprehension.
<p>Test 1B Verbal Comprehension–Synonyms</p> <p>Administration Overview</p> <ul style="list-style-type: none"> Test 1 Verbal Comprehension is comprised of four subtests—1A Picture Vocabulary, 1B Synonyms, 1C Antonyms, and 1D Verbal Analogies. You must administer all four subtests to obtain a score for Test 1 Verbal Comprehension. 	<p>Test 17A Reading Vocabulary–Synonyms</p> <p>Administration Overview</p> <ul style="list-style-type: none"> Test 17 Reading Vocabulary is comprised of three subtests—17A Synonyms, 17B Antonyms, and 17C Analogies. You must administer all three subtests to obtain a score for Test 17 Reading Vocabulary.
<p>Test 1C Verbal Comprehension–Antonyms</p> <p>Administration Overview</p> <ul style="list-style-type: none"> Test 1 Verbal Comprehension is comprised of four subtests—1A Picture Vocabulary, 1B Synonyms, 1C Antonyms, and 1D Verbal Analogies. You must administer all four subtests to obtain a score for Test 1 Verbal Comprehension. 	<p>Test 17B Reading Vocabulary–Antonyms</p> <p>Administration Overview</p> <ul style="list-style-type: none"> Test 17 Reading Vocabulary is comprised of three subtests—17A Synonyms, 17B Antonyms, and 17C Analogies. You must administer all three subtests to obtain a score for Test 17 Reading Vocabulary.
<p>Test 1D Verbal Comprehension–Verbal Analogies</p> <p>Administration Overview</p> <ul style="list-style-type: none"> Test 1 Verbal Comprehension is comprised of four subtests—1A Picture Vocabulary, 1B Synonyms, 1C Antonyms, and 1D Verbal Analogies. You must administer all four subtests to obtain a score for Test 1 Verbal Comprehension. 	<p>Test 17C Reading Vocabulary–Analogies</p> <p>Administration Overview</p> <ul style="list-style-type: none"> Test 17 Reading Vocabulary is comprised of three subtests—17A Synonyms, 17B Antonyms, and 17C Analogies. You must administer all three subtests to obtain a score for Test 17 Reading Vocabulary.

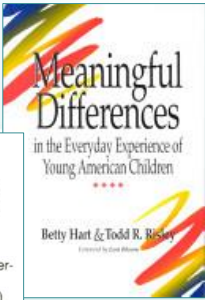
Slides by Jack A. Naglieri

Take Away Message

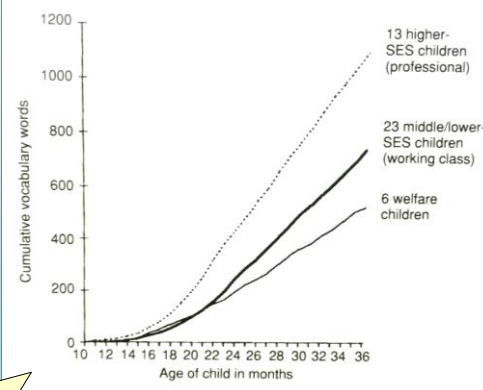
- Verbal and quantitative tests on traditional IQ are too confounded by achievement to be viable measures of general ability for students from poverty and all those with limited opportunity to learn as well as English language learners
- These tests under-estimate the actual ability of students who did not have the exposure to English and math

Conclusions

Vocabulary by SES



Exposure to words increase with educational level of parents.



Age (months)	Higher-SES (Professional)	Middle/Lower-SES (Working Class)	Welfare
10	0	0	0
12	10	10	10
14	20	20	20
16	40	30	25
18	80	60	40
20	150	100	60
22	250	150	80
24	380	220	100
26	500	300	120
28	650	400	140
30	800	500	160
32	950	600	180
34	1100	700	200
36	1250	800	220

Figure 2. At each month the average number of vocabulary words recorded in that and all prior months for three groups of children from the time the children were 10 months old until they were 36 months old. The children were grouped by the socioeconomic index assigned to the occupation of their parents (see Chapter 4, endnote 3). The 13 higher-SES children (dotted line) were in professional families, 23 middle-lower SES children (heavy solid line) were in working-class families, 23 middle-lower SES children (light solid line) were in families receiving welfare (Aid to Families with Dependent Children).

Conclusions 43

ARMY BETA

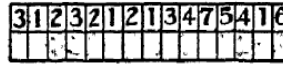
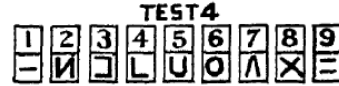
Slides by Jack A. Naglieri, Ph.D. (jnaglieri@gmail.com)

Conclusions 44

Army Mental Tests → WISC Digit Symbol (Coding) & Mazes

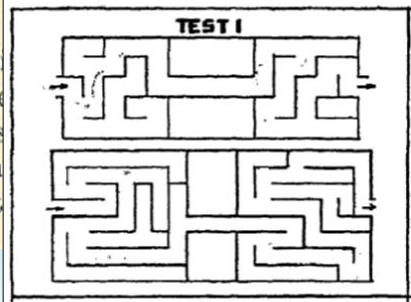
Test 7.—Digit Symbol

record sheet, points to blank below 2
 mbol for 2 at top of page, writes in s
 me way with the other parts of the
 cil, points to space below 3 in the te

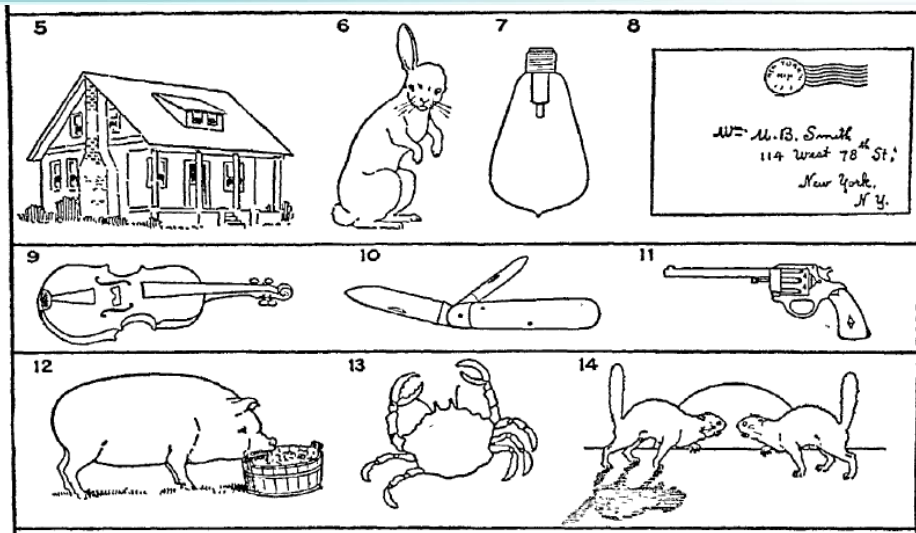


Test 8.—The Maze

onstration maze (a), and with his pencil
 shortest way out. At critical points he
 ll in wrong direction without marking, s
 tinues to work in the right direction
 maze A, gives S. pencil, points to st



Army Mental Testing → WISC Picture Completion



Conclusions

46

Army Beta

- The Performance tests on the Beta are referred to as nonverbal

No. 4.1 PSYCHOLOGICAL EXAMINING IN THE UNITED STATES ARMY. 183

Fig. 1. Moustache and feature profile.

Materials.—(1) Six pieces which when put together represent the conventional figure of a man.
 (2) Eight pieces which when put together form the figure of a human head.
 Directions.—(1) The pieces are placed before subject, as in figure 1. Each arm and each leg is placed at the opposite side of the body from the place where it fits. Examiner says, "Put this together as quickly as you can."

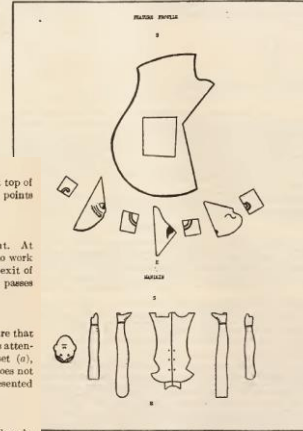


Fig. 1.—Moustache and feature profile pieces arranged for subject to explore.

placed before subject, as in figure 1. The three pieces forming the face are separated from pieces forming the rest. Examiner says, "Put this together as quickly as you can." (2) In five minutes, set (2) for solution. Spontaneous changes are allowed within the time limit. (3) The pieces make. If subject scores 3 or less on (a), examiner fits it together correctly and then sets on (d) is 6, (b) need not be given.

Test 7, digit symbol.

Examiner shows subject the record sheet, points to blank below 2 in the sample, then to symbol for 2 at top of page, writes in symbol, proceeds in the same way with the other parts of the sample, then gives subject pencil, points to space below 3 in the test, and nods affirmatively.

Test 8, the maze.

Examiner shows subject demonstration maze (a), and with his pencil proceeds to trace the shortest way out. At critical points he hesitates, moves pencil in wrong direction without marking, shakes his head, and continues to work in the right direction. He next presents test maze a, gives subject pencil, points to starting point and to exit of maze, and nods affirmatively. If subject fails to understand, examiner demonstrates again with maze a and passes on to (b). Mazes (b), (c), and (d) are presented in the same way, but no more demonstration is given.

Test 9, picture arrangement.

Examiner presents demonstrational set and allows subject to see it for about 15 seconds. Then, making sure that subject is attending, he slowly rearranges the pictures and points to each one in succession, attracting subject's attention especially to the sequence of important details. Next examiner removes these pictures and presents set (a), points to subject, and moves his hand about the pictures to indicate that they are to be arranged. If subject does not understand, examiner shows him the proper arrangement and then goes on to set (b). Sets (b), (c), and (d) are presented in the same way as (a), except that no further demonstration is given if subject fails.

Test 10, picture completion.

Examiner places material before subject as previously described. He then slowly points to the same boy in each of the pictures in succession to indicate the proper sequence of events. He next returns to the demonstrational picture, points to dressed and undressed foot, and to empty space. Next he looks leisurely over the small blocks, tries the slipper or the low shoe in the space, points to dressed foot, and shakes his head negatively. Then he puts in the correct piece showing satisfaction with result. Finally, he points in order to picture 1, to subject, to small blocks, and to the empty space in the picture, and nods affirmatively. If subject does not understand, examiner repeats.

ARMY ALPHA & BETA → WECHSLER

Back to the Origins of Traditional IQ

- One of the Enlisted men in the Medical Corps trained in the School for Military Psychology was the 22 year old **DAVID WECHSLER** (Jan 12, 1896 – May 2, 1981)

ward, Emerson C.	April, 1918.	do.	S. G. O.
Watkins, Clarence P.	November, 1918.	do.	Upton.
Weber, Chris O.	April, 1918.	Corporal.	Cody.
Wechsler, David.	May, 1918.	do.	Logan.
Wells, Cornelius L.	November, 1918.	Private.	Hoboken.
Werner, Helmuth C. J.	May, 1918.	do.	Dix.
West, Robert W.	June, 1918.	Corporal.	Wheeler.
Westcott, Ralph W.	May, 1918.	Private.	Upton.
Whitehead, Guy.	April, 1918.	Corporal.	Jackson.
Whitehead, James S.	May, 1918.	Private.	Upton.

Slides by Jack A. Naglieri, Ph.D. (jnaglieri@gmail.com)

Conclusions

49

Origins of Traditional IQ

- In May of 1918 a 22 year-old David Wechsler arrived at Camp Logan in Texas to use the newly developed Alpha and Beta (Yerkes, 1921, p. 40)



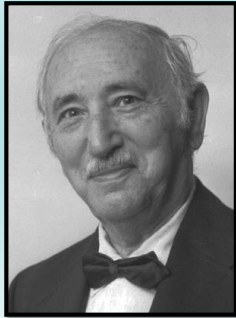
Slides by Jack A. Naglieri, Ph.D. (jnaglieri@gmail.com)

Conclusions

50

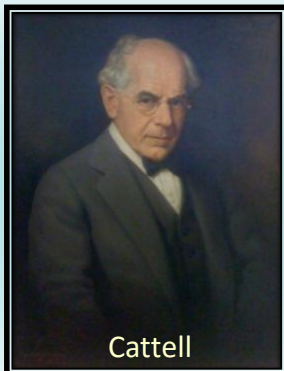
Army Testing Program?

- David Wechsler got an idea...make a version of the Army tests for use by clinical psychologists



The Psychological Corporation

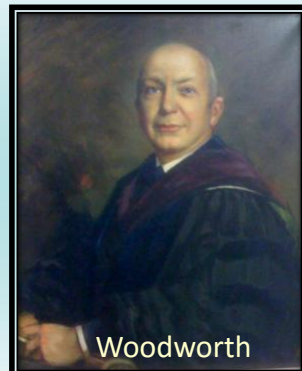
Cattell, Thorndike and Woodworth all have portraits at corporate headquarters of The Psychological Corporation (now Pearson) in San Antonio, Texas. They were on the board of the and instrumental in the formation of the company.



Cattell

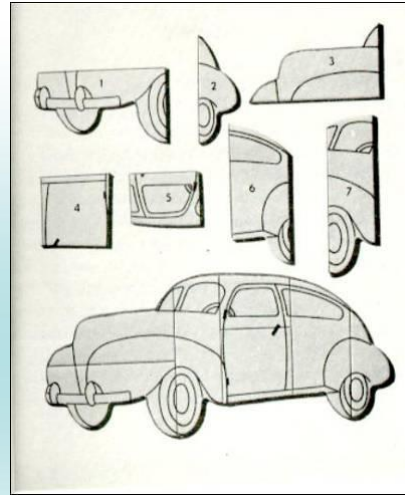
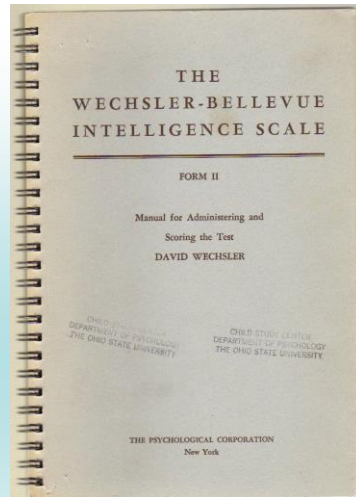


Thorndike



Woodworth

Wechsler-Bellevue (1939)



Conclusions

53

Army Alpha and Beta

- The *Army Alpha* - Verbal and Quantitative tests became the Verbal IQ scale
- The *Army Beta* became the Performance IQ scale (AKA Nonverbal)
- Did this mean Wechsler believed in Verbal and Nonverbal intelligences?

Slides by Jack A. Naglieri, Ph.D. (jnaglieri@gmail.com)

Conclusions

54

Presentation Outline

- Why Do IQ tests follow the Verbal, Quantitative, Nonverbal format?
- What do verbal and nonverbal tests measure?
- Nonverbal Tests & NNAT
- Is a nonverbal test effective for screening for gifted students
- Gifted Ed Discrimination on Trial: Guilty Verdict

Slides by Jack A. Naglieri, Ph.D. (jnaglieri@gmail.com)

Conclusions

55

Verbal Nonverbal Intelligence?

- Verbal / Nonverbal is a practical division
- Advantages of Verbal tests
 - they correlate with achievement because they have achievement in them
 - Information, Vocabulary, Arithmetic
- Advantages of Nonverbal Tests
 - they correlate with achievement without having achievement in them
- **Why NONVERBAL ?**

Conclusions

1927 Army Testing

METHODS AND RESULTS

19

Why Beta?

Men who fail in alpha are sent to beta in order that injustice by reason of relative unfamiliarity with English may be avoided.
Men who fail in beta are referred for individual examination by means of what may appear to be the most suitable and altogether appropriate procedure among the varied methods available. This reference for careful individual examination is yet another attempt to avoid injustice either by reason of linguistic handicap or accidents incident to group examining.

Note there is no mention of measuring verbal and nonverbal intelligences

Conclusions

57

What a Nonverbal Test Measures

- nonverbal assessment describes the content of the tests used to measure *general intelligence* not a theoretical construct of “nonverbal ability” (Bracken & McCallun, 1998)
- There is no assumption that nonverbal, as opposed to verbal, *abilities* are being measured

Conclusions

What a Nonverbal Test Measures

- *general ability* is measured using nonverbal tests so that many individuals may be assessed *using the same set of questions*
- measuring general ability nonverbally is, therefore, more appropriate, or fair, for culturally and/or linguistically diverse populations

Conclusions

General Intelligence

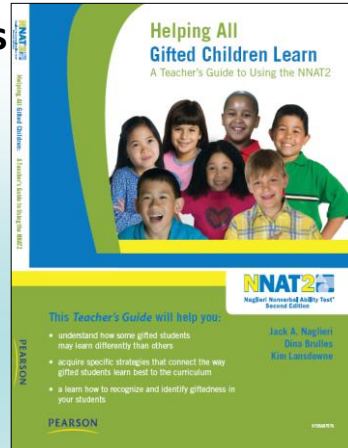
- The meaning of general intelligence
 - “we did not start with a clear definition of general intelligence... [but] borrowed from every-day life a vague term implying all-round ability and... we [are] still attempting to define it more sharply and endow it with a stricter scientific connotation” (p. 53)”.
 - *Intelligence Testing: Methods and Results* by Roudolf Pintner (1923)



Conclusions

General ability (Naglieri, Brulles & Lansdowne, 2009)

- **General ability is what allows us to solve many different kinds of problems**
- **The problems may involve**
 - reasoning, memory, sequencing, verbal and math skills, patterning, connecting ideas across content areas, insights, making connections, drawing inferences, analyzing simple and complex ideas.

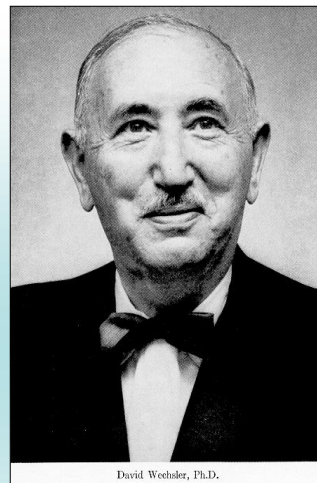


Conclusions

Wechsler's Definition

- **Definition of intelligence:**


“The aggregate or global capacity of the individual to act purposefully, to think rationally, and to deal effectively with his environment (1939)”



David Wechsler, Ph.D.

Conclusions

What a Nonverbal Test Measures

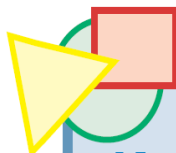
 Helping All Gifted Children Learn: A Teacher's Guide to Using the NNAT2

It is important to understand that even though Wechsler's intelligence (IQ) tests were organized into verbal and nonverbal sections, he did not mean that verbal and nonverbal are different types of ability. Wechsler (1958) explicitly stated that the organization of subtests into verbal and performance scales did *not* indicate that two distinctive types of intelligence were being measured. In fact, he

Conclusions

What a Nonverbal Test Measures

wrote: "the subtests are *different measures of intelligence, not measures of different kinds of intelligence*" (p. 64). Similarly, Naglieri (2003) further clarified that "the term nonverbal refers to the content of the test, not a type of ability" (p. 2). Thus, tests may differ in their content or specific demands, but still measure the concept of general intelligence.



What a Nonverbal Test Measures



Note

Wechsler (1975) included all of his intelligence tests under the umbrella term called general ability. He wrote "... the attributes and factors of intelligence, like the elementary particles in physics, have at once collective and individual properties" (p. 138). Even though a test may have questions that are verbal, quantitative, or nonverbal, they can be combined under the concept of general ability.


sions

General Intelligence

- The content of the activities may vary but they all require general ability
- Tests of general ability may be divided on the basis of the content of the questions...but that does not mean that different abilities are being measured

Conclusions

Presentation Outline

- Why Do IQ tests follow the Verbal, Quantitative, Nonverbal format?
- What do verbal and nonverbal tests measure?
-  ➤ Nonverbal Tests & NNAT
 - Is a nonverbal test effective for screening for gifted students
 - Gifted Ed Discrimination on Trial: Guilty Verdict

Slides by Jack A. Naglieri, Ph.D. (jnaglieri@gmail.com)

Conclusions

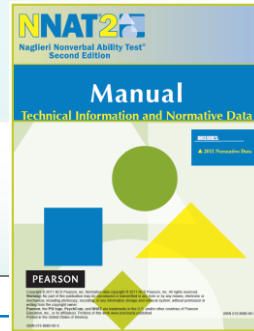
67

Nonverbal Tests of General Ability

Slides by Jack A. Naglieri, Ph.D. (jnaglieri@gmail.com)

68

What does NNAT2 Measure



Content

The NNAT2 is a nonverbal measure of general ability that is predictive of academic success (see Naglieri, 2008). All items share the same essential requirement—that the student examine the relationships among the parts of the design, called a matrix, and determine which response is the correct one based on the information inherent in the item. The item raw scores are summed to get the total raw score which is used to obtain the scaled score,

Naglieri Ability Index (NAI) score, stanine, and percentile rank. The NAI score represents the student's overall level of general ability when measured using nonverbal stimuli.

Conclusions

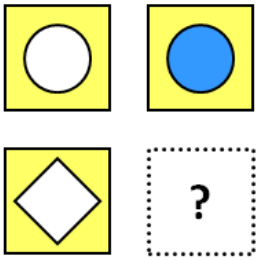
71

Naglieri Nonverbal Ability Test (Second edition)


A look at some illustrative items

**Girl is woman
as boy is to ?**


Both questions
require
the same kind
of thinking!



1 2 3 4 5



Presentation Outline

- Why Do IQ tests follow the Verbal, Quantitative, Nonverbal format?
- What do verbal and nonverbal tests measure?
- Nonverbal Tests & NNAT
-  Is a nonverbal test effective for screening for gifted students
- Gifted Ed Discrimination on Trial: Guilty Verdict

Slides by Jack A. Naglieri, Ph.D. (jnaglieri@gmail.com)

Conclusions

74

My Approach

- In order to have a scientific basis for use of the NNAT, I conducted research on special groups to answer the following questions:
- Does the NNAT work for Black and Hispanic students?
 - Does the NNAT work for ELL students?
 - Does the NNAT work for males and females?

Slides by Jack A. Naglieri, Ph.D. jnaglieri@gmail.com

Conclusions

75

Does the NNAT work for all groups?

Psychological Assessment
2000, Vol. 12, No. 3, 328–334

Copyright 2000 by the American Psychological Association, Inc.
1040-3596/00/\$5.00 DOI: 10.1037/1040-3596.12.3.328

Comparison of White, African American, Hispanic, and Asian Children on the Naglieri Nonverbal Ability Test

Jack A. Naglieri and Margaret E. Ronning
Ohio State University

This study examined differences between 3 matched samples of White ($n = 2,306$) and African American ($n = 2,306$), White ($n = 1,176$) and Hispanic ($n = 1,176$), and White ($n = 466$) and Asian ($n = 466$) children on the Naglieri Nonverbal Ability Test (NNAT; J. A. Naglieri, 1997a). The groups were selected from 22,620 children included in the NNAT standardization sample and matched on geographic region, socioeconomic status, ethnicity, and type of school setting (public or private). There was only a small difference between the NNAT scores for the White and African American samples (d ratio = .25) and minimal differences between the White and Hispanic (d ratio = .17) and between the White and Asian (d ratio = .02) groups. The NNAT was moderately correlated with achievement for the total sample and correlated similarly with achievement for the White and ethnic minority groups. The median correlation of NNAT with reading was .52 and NNAT with math was .63 across the samples. Results suggest that the NNAT scores have use for fair assessment of White and minority children.

Accurate assessment of intelligence for people from diverse cultural and linguistic backgrounds has been a topic of great debate and interest for some time (Sattler, 1988). To effectively evaluate diverse populations, researchers have widely used tests that comprise nonverbal, geometric designs arranged in a progressive matrix because they are considered culturally reduced in their content (Jensen, 1980; Naglieri & Prewett, 1990; Sattler, 1988). For ex-

as psychometric issues such as internal and test-retest reliability (Jensen, 1980; Naglieri, 1985a, 1985b; Naglieri & Prewett, 1990; Nicholson, 1989). In response to these needs, other progressive matrix tests have become available. This includes the Test of Nonverbal Intelligence (Brown, Sherbenou, & Johnsen, 1990), the Matrix Analogies Test—Short Form (MAT-SF; Naglieri, 1985b) and Expanded Form (MAT-EF; Naglieri, 1985a), the Naglieri

Race Ethnic Differences

	N	Mean	Diff
White	2,306	99.3	
Black	2,306	95.1	4.2
White	1,176	101.4	
Hispanic	1,176	98.6	2.8
White	466	103.6	
Asian	446	103.9	0.3

Conclusions 77

Race Differences by Test (Naglieri 2015)

Naglieri, J. A. (2015). 100 Years of intelligence testing: Moving from traditional IQ to second-generation intelligence tests. In Goldstein, Princiotta & Naglieri, *Handbook of Intelligence*. New York: Springer.

NNAT difference of 4.2

Table 20.1 Mean score differences in standard scores by race on traditional IQ and second-generation intelligence tests

Test	Difference
<i>Traditional</i>	
SB-IV (matched)	12.6
WISC-IV (normative sample)	11.5
WJ-III (normative sample)	10.9
WISC-IV (matched)	10.0
<i>Second generation</i>	
KABC (normative sample)	7.0
KABC (matched)	6.1
KABC-2 (matched)	5.0
CAS2 (normative sample)	6.3
CAS (demographic controls)	4.8
CAS2 (demographic controls)	4.3

Does the NNAT work for all groups?

- Jack A. Naglieri & Donna Ford (2003).
- Increasing Identification of Gifted Minority Children Using the Naglieri Nonverbal Ability Test (NNAT).
- *Gifted Child Quarterly*.

GIFTED IDENTIFICATION

Addressing Underrepresentation of Gifted Minority Children Using the Naglieri Nonverbal Ability Test (NNAT)

Jack A. Naglieri
George Mason University

Donna Y. Ford
The Ohio State University

ABSTRACT

A persistent problem in education is the underrepresentation of diverse students in gifted education programs. Many educators attribute the poor participation of diverse students in gifted programs to the ineffectiveness of standardized tests in capturing the ability of these students. Thus, a primary agenda of school selection committees is to find more culturally sensitive measures. This study examined the effectiveness of the Naglieri Nonverbal Ability Test (NNAT) in identifying gifted Black and Hispanic students in comparison to White students. The sample was comprised of

attribute the problem to standardized tests, contending that these tests fail to assess the strengths and abilities of culturally, ethnically, and linguistically diverse populations (e.g., Frazier et al., 1995). Support for this assertion comes from reports showing that Black, Hispanic, and Native American students consistently score lower than White students on traditional standardized tests (Brody, 1992; Sattler, 1988).

Despite the fact that intelligence tests such as the Wechsler Intelligence Scale for Children—Third Edition

PUTTING THE RESEARCH TO USE

Conclusions

79

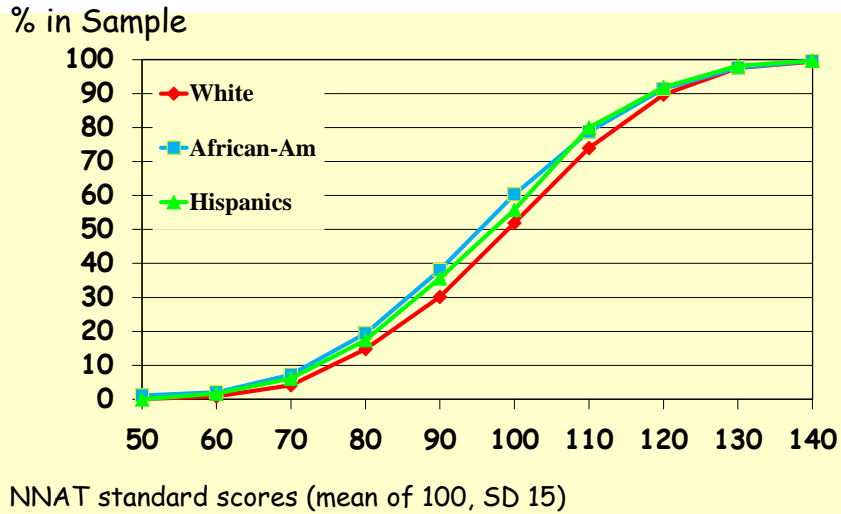
Naglieri & Ford (2001)

- Sample:
 - 19,210 children (fall 1995 NNAT sample)
 - Grades K to 12
- Goal: to examine the differential hit rates of children identified using NNAT scores
 - Cumulative frequency distributions were obtained for White (n = 14, 316), Black (n = 2,880), and Hispanic (n = 2, 014) samples

Conclusions

80

Naglieri & Ford (2003)



Conclusions 81

Table 2
NNAT Scores

	White		Black		Hispanic		Expected %
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	
120 & above	1,571	10.3	269	9.4	190	9.5	9.0
125 & above	906	5.6	145	5.1	88	4.4	5.0
130 & above	467	2.5	75	2.6	46	2.3	2.0
135 & above	190	1.1	42	1.5	18	0.9	1.0
140 & above	90	0.6	19	0.6	9	0.4	0.4
Total Sample <i>n</i>	14,141		2,863		1,991		

Note. Expected percentage values are those associated with normal curve probabilities.

relations to achievement provided by Naglieri and Ronning (2000a, 2000b) to include an important examination of the differential rates of identification for diverse groups. These results are similar to previous studies of the NNAT and its earlier version, the MAT (Naglieri, 1985a, 1985b), which demonstrated that the instrument yielded small differences between majority and minority groups (Naglieri, 1985b; Naglieri & Ronning, 2000a). More importantly, however,

quently, provide access to gifted education services. The primary difference between the NNAT and other group ability tests is that the latter typically include verbal, quantitative, as well as nonverbal tests. Some researchers have argued that a general ability test with verbal and quantitative items is limited in utility because it demands English language skills and knowledge directly taught in school (Naglieri, 1999; Naglieri & Prewett, 1990). This study

Does the NNAT work for ELL students?

Naglieri, Booth, & Winsler (2004). Comparison of Hispanic Children with and without Limited English Proficiency on the NNAT. *Psychological Assessment*.

Psychological Assessment
2004, Vol. 16, No. 1, 81–84

Copyright 2004 by the American Psychological Association, Inc.
1040-3590/04/\$12.00 DOI: 10.1037/1040-3590.16.1.81

BRIEF REPORTS

Comparison of Hispanic Children With and Without Limited English Proficiency on the Naglieri Nonverbal Ability Test

Jack A. Naglieri
George Mason University

Ashley L. Booth
University of Virginia

Adam Winsler
George Mason University

Hispanic children with ($n = 148$) and without ($n = 148$) limited English proficiency were given the Naglieri Nonverbal Ability Test (NNAT; J. A. Naglieri, 1997a) and the Stanford Achievement Test—9th edition (SAT-9; 1995). The groups were selected from the NNAT standardization sample ($N = 22,620$) and matched on geographic region, gender, socioeconomic status, urbanicity, and ethnicity. There was a very small difference (d ratio = 0.1) between the NNAT standard scores for the children with limited English proficiency ($M = 98.0$) and those without limited English proficiency ($M = 96.7$). The NNAT correlated moderately and similarly with achievement for the 2 groups. The sample of children with limited English proficiency earned considerably lower scores on SAT-9 Reading and Verbal subtests. Results suggest that the NNAT may be useful for the assessment of Hispanic children with and without limited English proficiency.

Assessment of intelligence for persons with limited English language skills has been an important issue since the familiar verbal-nonverbal organization of tests was initially made popular in the Army Alpha and Beta tests (Yuskum & Yerkes, 1920). The value of a nonverbal test for evaluation of diverse populations was noted by Yuskum and Yerkes more than 80 years ago: "Men who fail in alpha [the verbal tests] are sent to beta [the nonverbal tests] in order that injustice by reason of relative unfamiliarity with English may be avoided" (p. 19). The Beta tests and other similar nonverbal tests have, therefore, served an important role in effective assessment of diverse populations because their content is

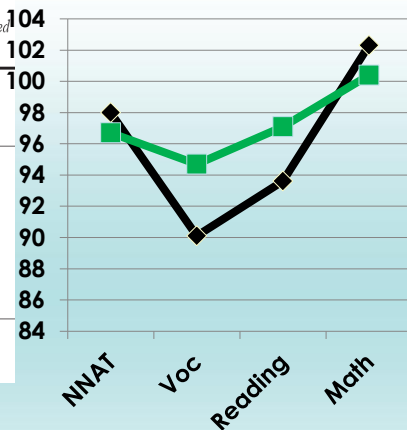
Recent research on the nonverbal approach to measuring general ability has shown that the Naglieri Nonverbal Ability Test (NNAT; Naglieri, 1997a) can be an effective way to assess general ability, yields small race and ethnic group differences, and shows good prediction of achievement. Naglieri and Ronning (2000a) provided a detailed study of mean score differences between matched samples of White ($n = 2,306$) and Black ($n = 2,306$), White ($n = 1,176$) and Hispanic ($n = 1,176$), and White ($n = 466$) and Asian ($n = 466$) children on the NNAT. Only small differences were found between the NNAT scores for the White and Black samples (Cohen's d

Hispanic Children

Table 2
Means, Standard Deviations, and Sample Sizes for Hispanic LEP and Non-LEP Matched Samples on Ability and Achievement Measures

Measure	LEP			Non-LEP			d ratio
	M	SD	n	M	SD	n	
NNAT	98.0	19.8	148	96.7	17.6	148	0.1
Total Reading	91.7	14.7	148	95.4	12.8	144	0.3
Vocabulary	90.1	17.0	133	94.7	13.0	143	0.3
Reading Comprehension	93.6	14.7	130	97.1	13.0	130	0.2
Listening	88.9	14.5	137	96.2	12.4	137	0.5
Total Math	98.5	15.7	148	96.7	14.0	144	0.1
Problem Solving	97.3	14.8	113	97.2	13.6	110	0.0
Procedures	102.3	18.2	113	100.4	17.6	113	0.1

Note. LEP = limited English proficiency.
* $p < .05$. ** $p < .01$.

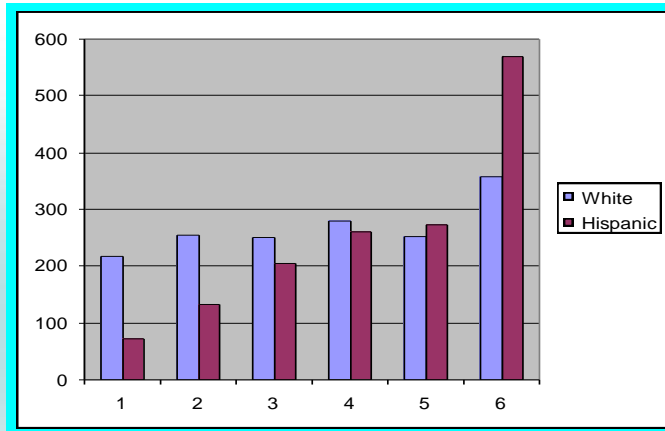


Slides by Jack A. Naglieri, Ph.D. Professor of Psychology, George Mason University.
Fairfax, VA 22030. naglieri@gmu.edu

Conclusions

84

Dr. Dina Brulles Glendale, AZ Gifted using NNAT in Years 2000-2006



Numbers of gifted population depicted by ethnic representation of White and Hispanic gifted student populations between 2000-2006

Conclusions

ID Rates for NNAT and COGAT

2013-2015 Screening pool					
NNAT			COGAT VQN		
Ethnic Group	Frequency	Percent	Ethnic Group	Frequency	Percent
White	1492	80.6%	White	1333	89.0%
Black	87	4.7%	Black	40	2.7%
Hispanic	272	14.7%	Hispanic	125	8.3%
Total	1851		Total	1498	
% Increase for Blacks -->			54.0%		
% Increase for Hispanics -->			54.0%		

Slides by Jack A. Naglieri, Ph.D. (jnaglieri@gmail.com)

Conclusions

Does the NNAT work for males & females?



Available online at www.sciencedirect.com



Intelligence 34 (2006) 253–260

Developmental gender differences on the Naglieri Nonverbal Ability Test in a nationally normed sample of 5–17 year olds

Johannes Rojahn*, Jack A. Naglieri

George Mason University, United States

Received 22 June 2005; received in revised form 18 September 2005; accepted 26 September 2005
Available online 14 November 2005

Abstract

Lynn [Lynn, R. (2002). Sex differences on the progressive matrices among 15–16 year olds: some data from South Africa. *Personality and Individual Differences* 33, 669–673.] proposed that biologically based developmental sex differences produce different IQ trajectories across childhood and adolescence. To test this theory we analyzed the Naglieri Nonverbal Ability Test (NNA; [Naglieri, J. A. (1997). *Naglieri Nonverbal Ability Test-Multilevel Form*. San Antonio: Harcourt Assessment Company.]) standardization sample of 79,780 children and adolescents in grades K-12, which was representative of the US census on several critical demographic variables. NNAT data were consistent with Lynn's developmental theory of gender differences insofar as (a)

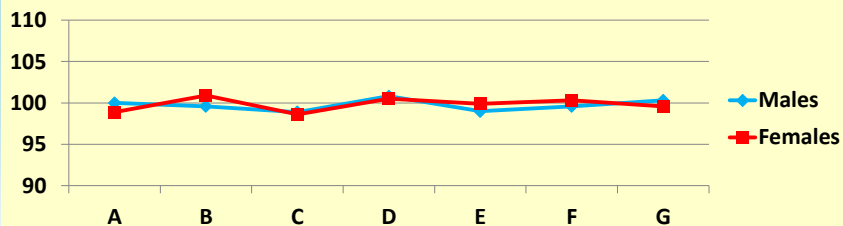
Gender Differences on NNAT

Table 2
Chronological ages and NAI scores for males and females by NNAT levels

Levels	Males					Females					d-ratio
	Age		NAI		n	Age		NAI		n	
	M	S.D.	M	S.D.		M	S.D.	M	S.D.		
A	6.1	0.4	100.0	15.5	2912	6.0	0.4	98.9	16.1	2803	0.07
B	7.1	0.5	99.6	16.0	3412	7.0	0.5	100.9	15.8	3384	-0.08
C	8.1	0.5	98.9	15.4	4044	8.0	0.5	98.6	15.5	4068	0.02
D	9.6	0.8	100.8	16.7	8016	9.5	0.7	100.5	15.5	7984	0.02
E	11.8	0.8	99.0	16.5	7716	11.7	0.7	99.9	15.4	7556	-0.06
F	14.2	1.0	99.6	17.1	8878	14.0	1.0	100.3	15.9	9286	-0.04
G	17.1	1.0	100.3	17.0	4656	16.9	0.9	99.6	14.7	5065	0.04

*= $p < .05$; **= $p < .01$; ***= $p < .001$.

NAI diff=gender differences in NNAT NAI scores.



Are Verbal and Quantitative Tests Needed?

	WISC-3 with WIAT	NNAT with SAT9
Median r	.59	.63
N	1,284	24,108

WISC-3 data from *WIAT Manual* Table C.1 ages 6-16

NNAT data from Naglieri (1997) *NNAT Technical Manual*

Conclusions

Presentation Outline

- Why Do IQ tests follow the Verbal, Quantitative, Nonverbal format?
- What do verbal and nonverbal tests measure?
- Nonverbal Tests & NNAT
- Is a nonverbal test effective for screening for gifted students
- Gifted Ed Discrimination on Trial: Guilty Verdict

Slides by Jack A. Naglieri, Ph.D. (jnaglieri@gmail.com)

Conclusions

90

Using a Nonverbal Test does NOT Necessarily Make Gifted Classes more Diverse

U-46 Court Decision about Testing ELL Students for Gifted Programs

Slides by Jack A. Naglieri, Ph.D. jnaglieri@gmail.com

91

Illinois School District U-46

IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF ILLINOIS
EASTERN DIVISION

DANIEL, DINAH and DEANNA MCFADDEN,)
minors, by their parent and next friend, Tracy)
McFadden; KAREN, RODOLFO and KIARA)
TAPIA, minors, by their parent and next friend,)
Mariela Montoya; JOCELYN BURCIAGA, minor,)
by her parent and next friend, Griselda Burciaga;)
and KASHMIR IVY, minors, by their parent)
and next friend, Beverly Ivy; KRISTIANNE)
SIFUENTES, minors, by her parent and next)
friend, Irma Sifuentes,)

Plaintiffs,)

v.)

BOARD OF EDUCATION FOR ILLINOIS)
SCHOOL DISTRICT U-46,)

Defendant.)

No. 05 C 0760

Judge Robert W. Gettleman

92

Illinois School District U-46

➤ Main question:

- Does the District's gifted program unlawfully discriminate against Hispanic Students?

On July 11, 2013, Judge Robert Gettleman issued a decision holding that District U-46 *intentionally* discriminated against Hispanic students specific in their gifted programming (placement), and found problems with policies and instruments for

Conclusions

Judge Gettleman's Decision

The Court's decision renewed the *Brown v. Board of Education* (1954) principle that 'separate is inherently unequal'.

... The court finds the District's method of identifying gifted Minority Students was flawed and resulted in an obvious disparate impact on those students by separating them from their gifted White peers.... By singling out most[ly] all Hispanic students for the segregated SET/SWAS program, the District deprived these children of that educational opportunity based on their ethnicity (p. 27).

Conclusions

Judge Gettleman's Decision

Judge Gettleman found discrimination regarding (a) tests for screening and for identification, (b) designated cutoff scores for screening and identification, (c) use of both verbal and math scores at arbitrary designated levels for screening and for identification, (d) use of weighted matrix, as well as content and criteria in weighted matrices that favored achievement and traditional measures, (e) too little reliance on a nonverbal test (Naglieri Nonverbal Ability Test) for admission to SWAS, (f) re-testing Hispanic students for middle school gifted program, (g) timing of testing, (h) use of parental referrals, and (i) use of teacher referrals (see Table 2).

Slides by Jack A. Naglieri, Ph.D. (jnaglieri@gmail.com)

Conclusions

95

Judge Gettleman's Decision

Table 2. Gatekeepers to SWAS: Policies, Procedures, and Instruments.

Policy, Procedures, and Instruments	Barriers to Under-Representation in SWAS
Tests selected for screening and identification	Traditional tests were gatekeepers to SWAS.
Too little reliance on a nonverbal test for admission to SWAS	Nonverbal test should have been used as it was effective for entry to SET/SWAS for Hispanic students who had exited ELL.
Re-testing Hispanic students for middle school gifted program	Re-testing Hispanic students and eliminating non-verbal test were gatekeepers to middle school SWAS.
Use of parental referrals	Parental referrals were gatekeepers to SWAS; they favored White parents.
Use of teacher referrals	Parental referrals were gatekeepers to SWAS; they favored White parents.

Slides by Jack A. Naglieri, Ph.D. (jnaglieri@gmail.com)

Conclusions

96

Moving Forward

- Black students represent 19% our nation's public schools but only 10% of gifted education
- Hispanic students represent 25% but only 16% of gifted education
- At least half a million of these students are not receiving the education they need to reach their potential (Ford, 2010).
- We can solve this social justice problem by identifying smart children by using nonverbal tests of general ability

Slides by Jack A. Naglieri, Ph.D. (jnaglieri@gmail.com)

Conclusions

97

Moving Forward

- Identify ALL students who are gifted (smart) as well as those who are talented (knowledgeable)
- Modify the curriculum to meet the needs of ALL gifted students
- This will have a substantial impact of the achievement gap between Black, Hispanic, and White students

Slides by Jack A. Naglieri, Ph.D. (jnaglieri@gmail.com)

Conclusions

98

Gifted as Social Justice Issue

