

Many educators feel strongly that to be identified and served as gifted, students must have both high ability and high achievement. Naturally, this means that many students who have high ability--as measured on a standardized assessment--but who are not yet achieving highly, will be left out of the school district's gifted programs. Schools inadvertently perpetuate underrepresentation of some groups of students, such as students with limited opportunities to learn outside of school, those living in poverty, those lacking support in the home, twice-exceptional learners, English language learners and under-achieving students (Clarenbach, 2015; Förd, 2015; Wright, et.al, 2017). These are the groups of students who most need appropriate opportunities to learn! Providing gifted services for students who are not achieving at levels commensurate with their ability is precisely what helps them develop their ability and increase achievement levels.



## High Ability Students Who are Not Yet Achieving Highly: Are they really gifted?

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1

1

## Conclusions

- Gifted identification based on verbal, nonverbal and quantitative tests requires too much knowledge of English in the directions as well as the content of questions
  - Students who come from low income families, are culturally different, or limited English skills are not assessed accurately
  - Many Hispanic and Black students are denied entry to gifted education and therefore they don't reach their potential
  - BUT...WE CAN DO BETTER !

2

2

FOR MORE  
INFORMATION,  
PLEASE GO TO OUR  
WEB PAGE

[naglierigiftedtests.com](http://naglierigiftedtests.com)



3

3

Ideas to  
Consider



## Gifted Identification

### Ability Tests' Content

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### New General Ability Tests

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4

# Devion

- Devion lived with his mother and father and two siblings in Springfield, Illinois
- The family has an annual income of \$12,000
- 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."

**THE WALL STREET JOURNAL**  
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**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 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 2014. 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 fall off as long as they remain prof-

**What's News**

Business and Finance      World-Wide

U.S. AND OTHER AID POURED into Iran, Iran's quake-stricken city. Devion had estimates passed 2,000 after the 6.3-magnitude tremor 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 police divisions, the Bush administration dispatched seven planeloads of rescue workers and supplies. Such "earthquake diplomacy" can build goodwill. They also lost to humanity in the *Iran crisis*, a mix of unresolved conflicts, issues, weapons and circumstances that by closing the canal took 2,000 years.

U.S. Holstein infected with mad-cow disease might have originated in Canada. Meat companies and retailers are trying to recall beef from the cow.

Some experts say the risk of eating meat made from sick cattle remains unknown. Japan and other trading partners are unlikely to lift their bans on U.S. beef.

Recall spending grew a healthy 6.5% during the holiday shopping season, according to data showing MasterCard use.

Corporate related-party deals are attracting increased attention.

**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 Lincoln.

These days, a growing number of two-bit battles are rattling the sleepy U.S. Mint. The federal agency's commemorative quarters program, a pocket-change parade to the 50 states, has pitted politicians, tourism officials and artists against each other in bruising battles. Launched in 1999 as a benign patriotic



*Devion Bates*

But a school faces no penalty if top students fall off as long as they remain prof-

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

By 300 Large Corporations; Potential for Conflict

Legacy of Family Ownership

By JOHN R. ENNEWELLER

Before the midsize deals that would later become the focus of the federal agency's commemo-

Wash. there's a glaring conflict of interest in Mr. Pastore acting on behalf of the huge energy concern and his own partnership in business deals totaling hundreds of millions of dollars.

At 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-

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

giant to revive coin collecting. It's instead spurring periods again over custody of American coins and how states define themselves.

The question in Texas: Remember the Alamo—or the coin-based arena.

5

5

# Wall Street Journal

- 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 were problems
- Devion is NOT getting good grades in school
- He is uncooperative
  - Devion's teacher recently told the class to write to Mickey Mouse, congratulating the cartoon character on his 75th birthday. "Second-graders have to learn how to write a friendly letter," she said.
  - Devion said the assignment bored him. He said: "I could write 100 pages about Pokemon. A whole book."
- His teacher did not think he should be in the gifted program

What happened to Devion?

6

6

## Devion Graduates High School



7

7

## Obstacle to Equitable Identification

- Clarification of terms...
  - Gifted = very smart
  - Talented = very accomplished
- Identification procedures
  - Gifted/Talented students are often identified with traditional IQ tests comprised of subtests like Vocabulary, Similarities, Arithmetic, Comprehension which demand knowledge
  - Using a test of ability that demands knowledge of English and understanding verbal directions is not reasonable

8

8

848,400 non-White  
247,500 ELL gifted  
in grades K-12 not  
served

WHY are so  
many of these  
students  
missed?

## Number of Students Missed = 848,402

Table 1. Number of Students in US Public Schools Grades K-12 in 2018

	US Population	Potentially Gifted (8%) of US Population	Actual Numbers of Students in Gifted & Talented Programs	Numbers of students Not Identified
White	26,822,930	2,145,834	2,065,366	80,468
Black	8,530,756	682,460	366,823	315,637
Hispanic	15,888,681	1,271,094	778,545	492,549
Native American	572,330	45,786	25,183	20,603
Two or More Races	1,782,991	142,639	123,026	19,613
<b>Total non-White</b>	<b>26,774,758</b>	<b>2,141,979</b>	<b>1,293,577</b>	<b>848,402</b>

English language learner (ELL) students enrolled in public elementary and secondary schools in 2015 by Race and Ethnicity

	N of ELL in Public Ed	N Potentially Gifted (8%)	N students Identified	N Missed (% Missed)
White	294,763	23,581	8,548	15,033 (64%)
Black	178,141	14,251	5,166	9,085 (64%)
Hispanic	3,772,633	301,811	109,406	192,404 (64%)
Asian	511,703	40,936	14,839	26,097 (64%)
Pacific Islander	26,992	2,159	783	1,377 (64%)
Native Am./ Alaska Native	38,792	3,103	1,125	1,978 (64%)
Two or More Races	31,136	2,491	903	1,588 (64%)
<b>Total</b>	<b>4,854,160</b>	<b>388,333</b>	<b>140,771</b>	<b>247,562</b>

Ideas to Consider:

Who conceived the content of our IQ tests

“The hardest part of learning something new is not embracing new ideas, but letting go of old ones.”

- Todd Rose, *The End of Average*

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## Gifted Identification

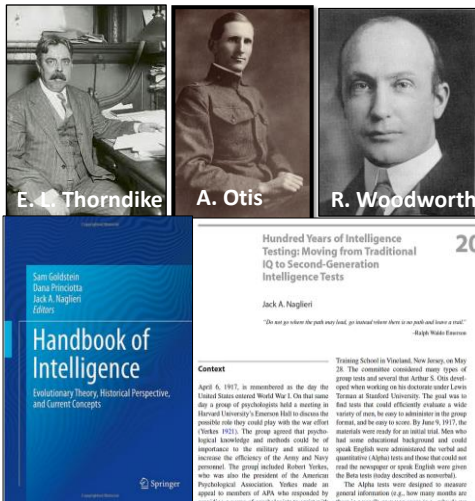
Ability Tests’ Content –  
WHERE DID IT COME FROM?

## New General Ability Tests

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# Army Mental Testing (Yoakum & Yerkes)

<http://www.jacknaglieri.com/cas2.html>

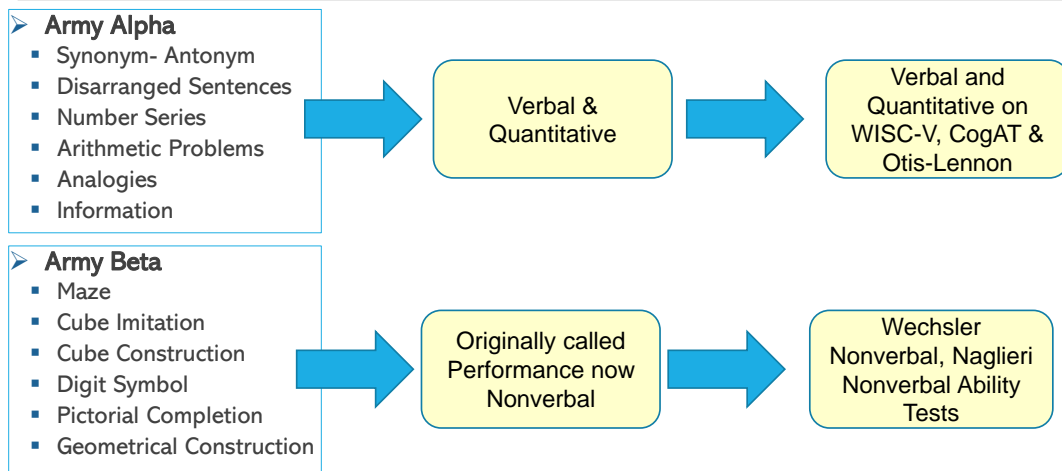


- A group of psychologists met at Harvard in April of 1917 to construct an ability test to help the US military evaluate recruits (WWI) for responsible positions
- Their goal was to develop a workable set of tests called the Army Alpha & Beta
- That became Verbal & Performance on WISC

11

11

## From Alpha & Beta to Wechsler IQ



12

12

## Army Testing (Yoakum & Yerkes, 1920) & Pintner (1923)

### 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.

### INTELLIGENCE TESTING

#### METHODS AND RESULTS

BY  
RUDOLF PINTNER, Ph.D.  
PROFESSOR OF EDUCATION IN TEACHERS COLLEGE  
COLUMBIA UNIVERSITY

I. *Tests must be relatively new.* — A good intelligence test must avoid as much as possible anything that is commonly learned by the subjects tested. In a broad sense this rests upon a differentiation between knowledge and intelligence. To use as a test of intelligence

13

13

## Our Tests Demand Knowledge

### Stanford-Binet 5

- Verbal
- Knowledge
- Quantitative Reasoning
- Vocabulary
- Verbal Analogies

### WISC-V

- Verbal Comprehension: Vocabulary, Similarities, Information & Comprehension
- Fluid Reasoning: Figure Weights, Arithmetic

### WJ-IV and Bateria-IV (including Cross Battery)

- Comprehension Knowledge: Vocabulary & General Information
- Fluid Reasoning: Number Series & Concept Formation
- Auditory Processing: Phonological Processing

### K-ABC-II

- Knowledge / GC: Riddles, Expressive Vocabulary, Verbal Knowledge

14

14

WJ-IV Items from Cognitive and Achievement Tests:

Cognitive: Oral Vocabulary Subtest 1

**Sample Items**

Point to *near* on subject's page and say: **Another word that means *near* is *close*** (pronounced kloz, not kloz).

A. Point to *big* on subject's page and say: **Tell me another word for *big*.**

▲ **Correct:** large, gigantic, huge

◆ **A: Error or No Response**  
Score item 0. Say: **Another word for *big* is *large*.** Repeat Sample Item A.

B. Point to *nap* and say: **Tell me another word for *nap*.**

▲ **Correct:** sleep, rest, snooze

◆ **B: Error or No Response**  
Score item 0. Say: **Another word for *nap* is *sleep*.** Repeat Sample Item B.

Very Similar Items on "Different" Tests

Achievement: Reading Vocabulary-Synonyms Subtest 17

**Sample Items**

Point to *street* on subject's page and say: **Another word that means *street* is *road*.**

A. Point to *large* on subject's page and say: **Tell me another word for *large*.**

▲ **Correct:** big, enormous, gigantic, huge

◆ **A: Error or No Response**  
Score item 0 and say: **Another word for *large* is *big*.** Repeat Sample Item A.

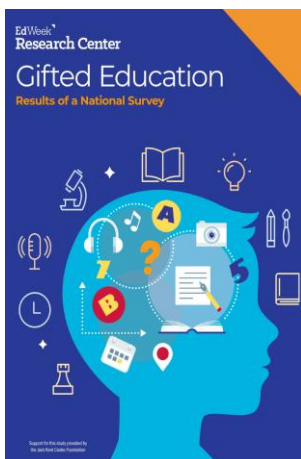
B. Point to *sleep* and say: **Tell me another word for *sleep*.**

▲ **Correct:** nap, doze, rest, snooze

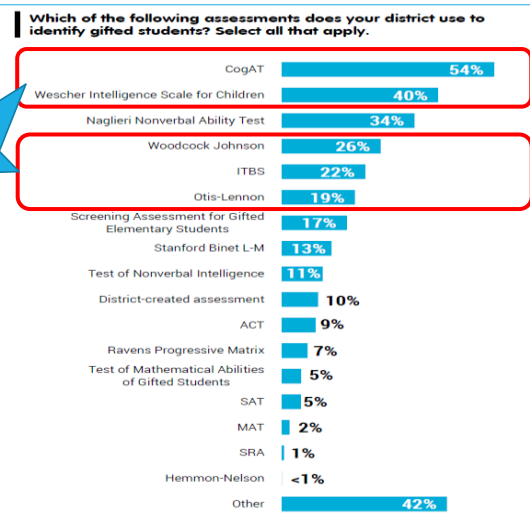
◆ **B: Error or No Response**  
Score item 0 and say: **Another word for *sleep* is *nap*.** Repeat Sample Item B.

Do not read any other items or tell subject any other words during this test.

# National Survey of Gifted Education



These tests have verbal and quantitative questions and lengthy verbal directions





## Race and Ethnic Differences in Ability Tests used in Identification of Gifted and Twice Exceptional Students

Note: Even though these tests may not show psychometric bias (Worrell, 2019) some do yield mean score differences.

Mean Score Differences in Intelligence Test Scores by Race & Ethnicity.		
	Race	Ethnicity
<b>Tests that require knowledge</b>		
Otis-Lennon School Ability Test (school system)	13.6	
Stanford-Binet IV (normative sample)	12.6	
WISC-V (normative sample)	11.6	9.1
WJ- III (normative sample)	10.9	10.7
CogAT7 (Nonverbal scale)	11.8	7.6
WISC-V (statistical controls normative sample)	8.7	5.4
<b>Tests that require minimal knowledge</b>		
CAS-2 (normative sample)	6.3	4.5
CAS (statistical controls normative sample)	4.8	4.8
CAS-2 (statistical controls normative sample)	4.5	1.8
NNAT (matched samples)	4.2	2.8

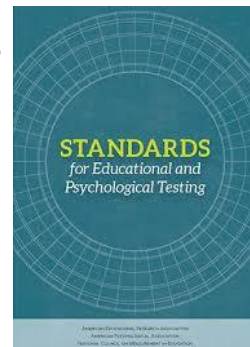
Citations: For the Otis-Lennon School Ability Test by Avant and O'Neal (1986); Stanford-Binet IV from Wasserman (2000); Woodcock-Johnson III race differences from Edwards & Oakland (2006) and ethnic differences from Sotelo-Dynega, Ortiz, Flanagan & Chaplin (2013); CogAT7 from Carman, Walther and Bartsch (2018); WISC-V from Kaufman, Raiford & Coalson (2016); CAS from Naglieri, Rohahn, Matto & Aquilino (2005); CAS-2 from Naglieri, Das & Goldstein, 2014; Naglieri Nonverbal Ability Test (Naglieri & Ronning, 2000).

From: Brulles, D., Lansdowne, K. & Naglieri, J. A. (2022). Ensuring Equity: Identifying and Serving All Gifted Students Using the Naglieri Tests of General Ability. Minneapolis, MN: Free Spirit Publishing. And Naglieri, J. A. & Otero, T. M. (2017). Essentials of CAS2 Assessment. New York: Wiley.

17

## Opportunity to learn and Equity

- *According to the Standards for Educational and Psychological Testing (AERA, APA & NCME, 2014), if a person has had limited opportunities to learn the content in a test of intelligence, that test may be considered **unfair because** it penalizes students for not having learned the content*
- **Equitable assessment** can be achieved if all examinees have equal opportunity to perform
- The Standards also remind us that **even if the norming data do not demonstrate psychometric bias tests can still be considered unfair.**



18

18

## Illinois School District U-46

Main question: Does the District's gifted program unlawfully discriminate against Hispanic Students?

The district with 42% Hispanics but only 2% of students in gifted were Hispanic.

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, ) No. 05 C 0760  
v. ) )  
 ) )  
BOARD OF EDUCATION FOR ILLINOIS )  
SCHOOL DISTRICT U-46, ) Judge Robert W. Gettleman  
 ) )  
Defendant. ) )

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 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

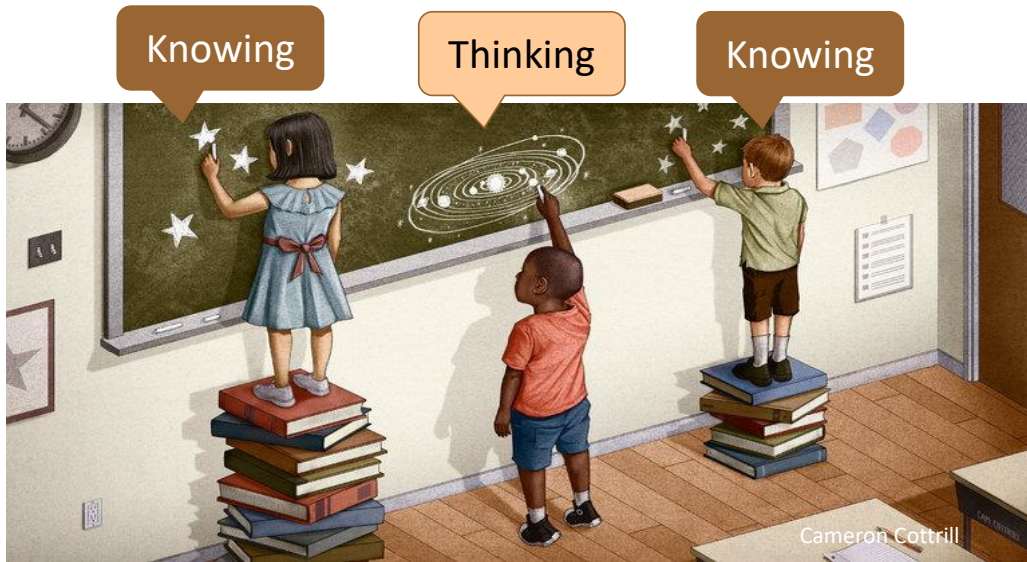
## Solution: Measure Thinking not Knowledge

- What does the student have to know to complete a task?
  - This is dependent upon educational opportunity



- How does the student have to think to complete a task?
  - This is dependent on the brain





Why Talented Black and Hispanic Students Can Go Undiscovered  
By SUSAN DYNARSKI APRIL 8, 2016

21

21

## Gifted Identification

- This presentation is about children who may not have good grades, or the academic skills or command of English, yet they are very smart – **gifted**
- These children can become very **talented** given the opportunity to learn
- How do we evaluate students for gifted education?

22

22

### Percentages of Group Administered Tests Used for GT Identification

Test	Percentage Used	Amount of Knowledge Required
ITBS	22%	100%
CogAt	54%	66%
Sages	17%	63%
Woodcock	26%	43%
Binet	13%	40%
Otis-Lennon	19%	40%
Wechsler	40%	40%
Naglieri NAT	34%	0%

Usage data from: Kurtz, H., Harwin, A., Chen, V. & Furuya, Y. (2019). *Gifted education: Results of a national survey*. Bethesda, MD: Education Week Research Center.

The two most widely used measures of ability (CogAT and Wechsler) have the most amount of knowledge in the test questions and long verbal directions that demand verbal comprehension, knowledge of verbal concepts and working memory.

## Tests Used for Identification Along the Thinking and Knowing Continuum

From: Brulles, D., Lansdowne, K. & Naglieri, J. A. (2022). *Ensuring Equity: Identifying and Serving All Gifted Students Using the Naglieri General Ability Tests*. Minneapolis, MN: Free Spirit Publishing.

23

# Thinking & Knowing Hispanic Children

Psychological Assessment  
2004, Vol. 14, No. 1, 18-24

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 = 21,620) and matched on geographic region, gender, socioeconomic status, subsistency, 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 (Yuskam & Yerkes, 1930). The value of a nonverbal test for evaluation of diverse populations was noted by Yuskam 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 predictors 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. (Gibson, J.

Test	Thinking (Black Line)	Knowing (Green Line)
NNAT	~98	~97
Voc	~90	~95
Reading	~94	~97

24

# Thinking → Small 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	103.0	0.3

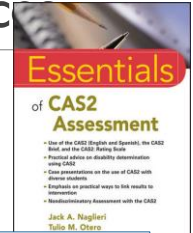
**Psychological Assessment**  
2006, Vol. 11, No. 3, 222-234

Copyright 2006 by the American Psychological Association, Inc.  
0893-3200/06/\$12.00 DOI: 10.1037/1040-359X.11.3.222

### 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 ( $n = 446$ ) 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.



**Table 1.6 Standard Score Mean Differences by Race on Traditional and Nontraditional Intelligence Tests**

Test	Difference
<b>Traditional IQ Tests</b>	
SB-IV (matched samples)	12.6
WISC-IV (normative sample)	11.5
WJ-III (normative sample)	10.9
WISC-IV (matched samples)	10.0
<b>Nontraditional Tests</b>	
K-ABC (normative sample)	7.0
K-ABC (matched samples)	6.1
KABC-II (matched samples)	5.0
CAS2 (normative sample)	6.3
CAS (demographic controls of normative sample)	4.8
CAS2 (demographic controls of normative sample)	4.3

# NNAT Identified Equal Percentages

**Table 2**  
**NNAT Scores**

	White		Black		Hispanic		Expected %
	n	%	n	%	n	%	
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 n	14,141		2,863		1,991		

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

**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 composed 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., Frasier 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 (Block, 1992; Sankar, 1988).

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

**PUTTING THE RESEARCH TO USE**

**Very Similar percentages of Black, White and Hispanic students earned a standard score of 125 (95<sup>th</sup> percentile) or above**

# Card & Giuliano (2017)

[www.pnas.org/cgi/doi/10.1073/pnas.1605043113](http://www.pnas.org/cgi/doi/10.1073/pnas.1605043113)

- Effects of universal assessment (including the NNAT) to all students in years 2006 and 2007 (N = 79,650)

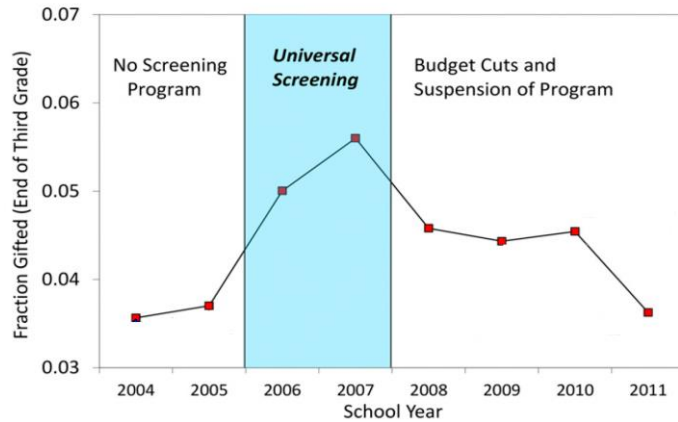


Fig. 1. Fraction gifted by end of third grade,

27

27



Conclusion: Taking the knowledge out of ability tests improves equity

Questions?  
Reactions?

28

28

## *Equitable Identification of Gifted Students*

### ➤ CONCLUSIONS

- Tests typically used to identify gifted/talented students require too much language and information:
  - language used in the **directions** (V, NV, Q)
  - Verbal and math knowledge required in the **questions** (V & Q)
  - Verbal expression to **answer** verbal questions(V)
- Students who come from low income families, are culturally different, or limited English skills are at disadvantage
- Many Hispanic and Black students are denied entry to gifted education and therefore they don't reach their potential
- **BUT...WE CAN and MUST DO BETTER especially NOW!**

29

29

Ideas to  
Consider



## Gifted Identification

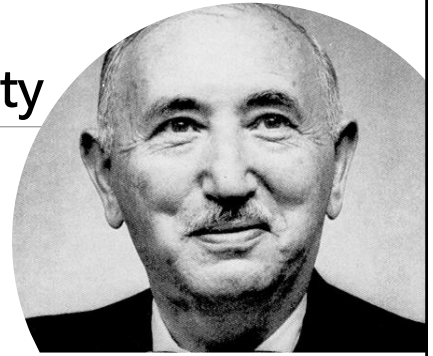
## Ability Tests' Content

## New General Ability Tests

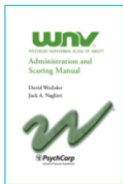
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## Wechsler's View of General ability

- Wechsler “believed that his Verbal and Performance Scales represented different ways to access *g* (general ability)”, but he never believed [in verbal and] nonverbal intelligence as being separate from *g*. Rather he saw the Performance Scale as the most sensible way to measure the general intelligence of people with ... limited proficiency in English. (Kaufman, 2008)



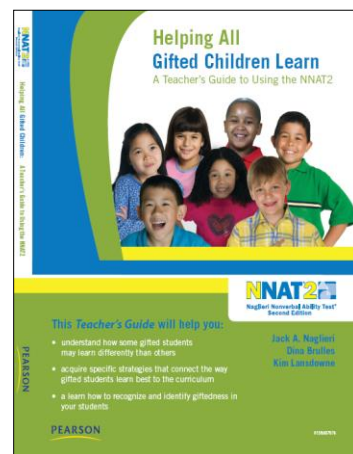
“The aggregate or global capacity of the individual to act purposefully, to think rationally, and to deal effectively with his environment (1939)”



31

## General ability (Naglieri, Brulles & Lansdowne, 2009)

- General ability (i.e. '*g*') is what allows us to solve many 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.
- Verbal or Nonverbal describes the content of the test NOT a type of intelligence

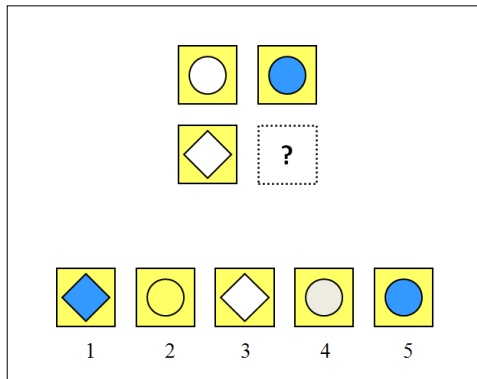


32

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## These questions require General Ability!



Which word is different:  
girl dog chair fish ?

3 is to 6 as 5 is to \_\_\_\_\_?

C<sup>7</sup> is to F as E<sup>7</sup> is to \_\_\_\_\_?

Despite the differences in content, each of these questions requires understanding the relationships among parts.

33

33

## General Ability

How do  
*different* tasks  
use the *same*  
ability?



- Even though the tasks were different in content (shapes, words, numbers) they all rely on **general ability (*g*)** as described by Spearman, Wechsler and many others
- The reason is that they all require understanding relationships among things or ideas

34

34



Journal Information  
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Structural validity of the Wechsler Intelligence Scale for Children–Fifth Edition: Confirmatory factor analyses with the 16 primary and secondary subtests.

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Canivez, Gary L., Watkins, Marley W., Dombrowski, Stefan C.

Canivez, G. L., Watkins, M. W., & Dombrowski, S. C. (2017). Structural validity of the Wechsler Intelligence Scale for Children–Fifth Edition: Confirmatory factor analyses with the 16 primary and secondary subtests. *Psychological Assessment, 29*(4), 458–472. <https://doi.org/10.1037/pas0000358>

The factor structure of the Wechsler Intelligence Scale for Children–Fifth Edition (WISC-V; Wechsler, 2014a) standardization sample (N = 2,200) was examined using confirmatory factor analyses (CFA) with maximum likelihood estimation for all reported models from the WISC-V *Technical and Interpretation Manual* (Wechsler, 2014b). Additionally, alternative bifactor models were examined and variance estimates and model-based reliability estimates ( $\omega$  coefficients) were provided. Results from analyses of the 16 primary and secondary WISC-V subtests found that all higher-order CFA models with 5 group factors (VC, VS, FR, WM, and PS) produced model specification errors where the Fluid Reasoning factor produced negative variance and were thus judged inadequate. Of the 16 models tested, the bifactor model containing 4 group factors (VC, PR, WM, and PS) produced the best fit. Results from analyses of the 10 primary WISC-V subtests also found the bifactor model with 4 group factors (VC, PR, WM, and PS) produced the best fit. Variance estimates from both 16 and 10 subtest based bifactor models found dominance of general intelligence (g) in accounting for subtest variance (except for PS subtests) and large  $\omega$ -hierarchical coefficients supporting general intelligence interpretation. The small portions of variance uniquely captured by the 4 group factors and low  $\omega$ -hierarchical subscale coefficients likely render the group factors of questionable interpretive value independent of g (except perhaps for PS). Present CFA results confirm the EFA results reported by Canivez, Watkins, and Dombrowski (2015); Dombrowski, Canivez, Watkins, and Beaujean (2015); and Canivez, Dombrowski, and Watkins (2015). (PsycINFO Database Record (c) 2019 APA, all rights reserved)

## Support for ‘g’

- The small portions of variance uniquely captured by [subtests]... render the group factors [scales] of questionable and support the value of general ability
- Present CFA results confirm the EFA results (Canivez, Watkins, & Dombrowski, 2015); Dombrowski, Canivez, Watkins, & Beaujean (2015); and Canivez, Dombrowski, & Watkins (2015).

35

35

## Test Directions ALSO Matter

- *California Achievement Test & Iowa Test of Basic Skills* instructions include many basic concepts that students may not have mastered at the ages for which the tests were intended (Cummings & Nelson, 1980)
- Students’ ability to recall directions presented orally was related to their working memory capacity. (Randall, Engle, Carullo, & Collins, 2015)
- CogAT *nonverbal* scale demands comprehension of *verbal* directions
  - The instructions for 5 and 6-year-olds contain approximately 400 words and many verbal concepts and complex verbal statements like: **The small circle goes with the large circle in the same way that the small square goes with the large square.**
- The inclusion of verbal concepts and strain on working memory are an obstacle for any student with limited verbal skills

36

36



What are  
you  
thinking?

37

37

## Measuring General Ability Equitably Using the Naglieri General Ability Tests: Verbal, Nonverbal and Quantitative

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38

38

## Naglieri General Ability Tests

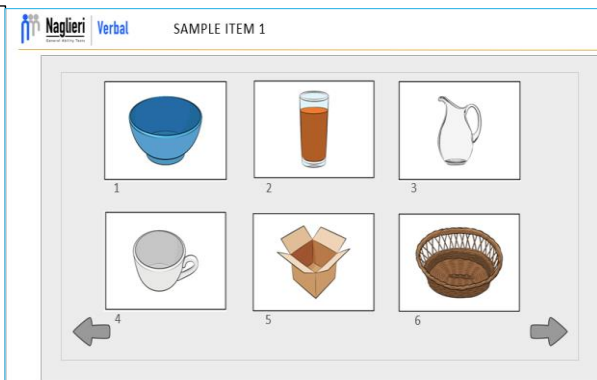
- We **explicitly constructed tests for equitable identification** of students from diverse cultural, linguistic, or socioeconomic backgrounds
- We used the traditional Verbal, Nonverbal and Quantitative formats to measure general ability and to ensure equity we used:
  - Test questions that do not require academic knowledge,
  - Verbal and Quantitative test questions that can be solved using any language,
  - Animated instructions remove the need for comprehension of directions,
  - A multiple-choice response which removes the need for verbal expression.
  - Online (and paper) administration for groups or individual assessment

39

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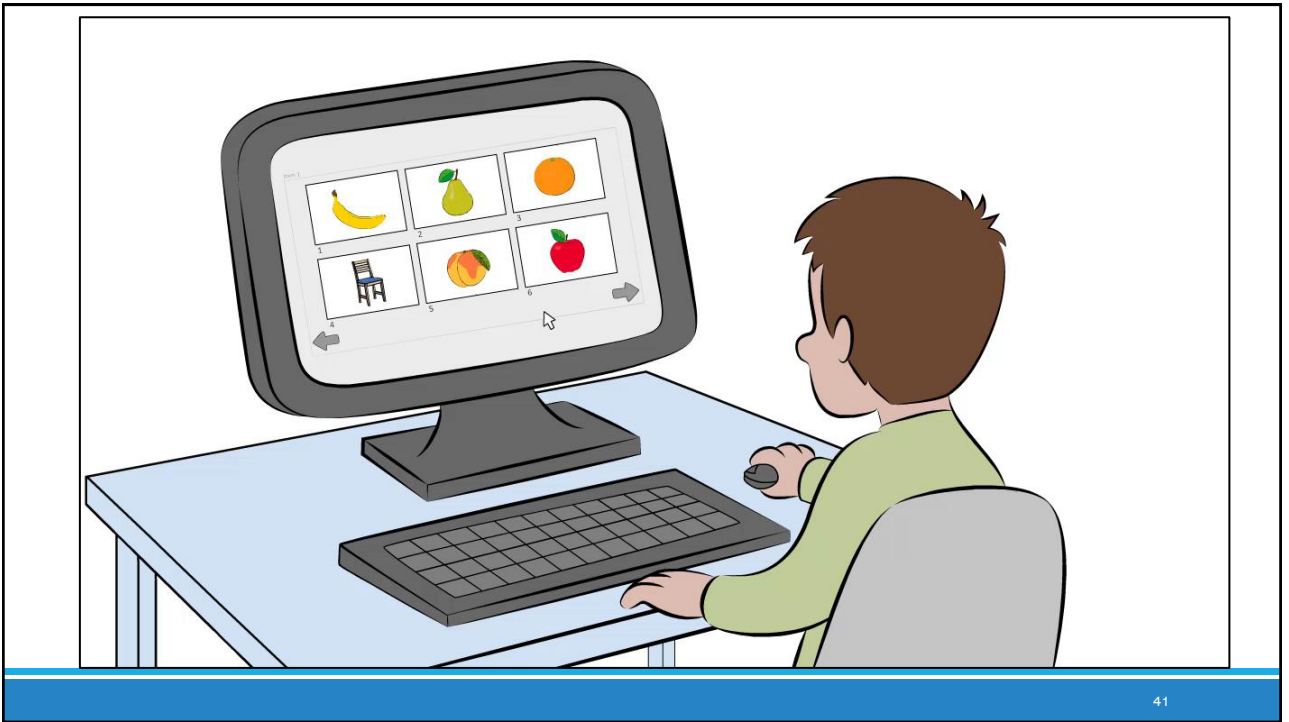
## Naglieri Ability Test – Verbal (Naglieri & Brulles)

Neuropsychologist A. R. Luria (1982) stated that language involves, "a complex system of codes (p. 29)" where, "every word *designates a thing, an attribute, an action or a relationship* (p 34)."  
He would ask a person to find the superfluous forth word in this example: "rose, daisy, stem, tulip," as a way to measure language competence.



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41

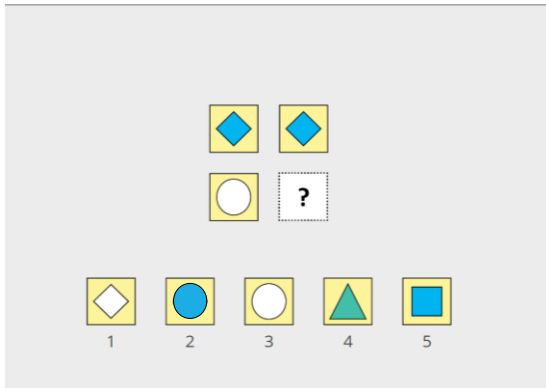
## Verbal Pilot Study Results (2019)

- **SAMPLE**
  - **2,482** That closely matches the US population on key demographics
- **GENDER**
  - No difference between **males** and **females** for raw score across all forms
- **RACE/ETHNICITY**
  - No differences among **White, Black, & Hispanic** for raw score across all forms
- **PARENTAL EDUCATION LEVEL**
  - No differences among five education levels (**No high school diploma; High School graduate; Some college/Associate's degree; Bachelor's degree; Graduate/professional degree**) for raw score across all forms

42

42

## Naglieri Ability Test - Non-verbal



- Online and paper versions
- Group or individual administration
- Several NEW types of items have been developed
- Animated instructional video
- Interactive practice questions
- Minimal verbal directions
- Pre-K, Kindergarten, Grade 1, Grade 2, Grade 3/4, Grade 5/6, Grade 7-9, Grade 10-12

43

43



44

44

# Nonverbal Pilot Study Results (2019)

## ➤ SAMPLE

- **3,630** That closely matches the US population on key demographics

## ➤ GENDER

- No difference between **males** and **females** for raw score across all forms

## ➤ RACE/ETHNICITY

- No differences among **White, Black, & Hispanic** for raw score across all forms

## ➤ PARENTAL EDUCATION LEVEL

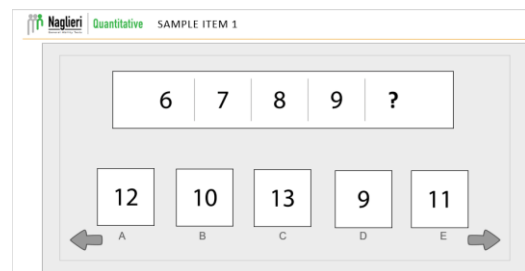
- No differences among five education levels (**No high school diploma; High School graduate; Some college/Associate's degree; Bachelor's degree; Graduate/professional degree**) for raw score across all forms

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45

# Naglieri Ability Test - Quantitative

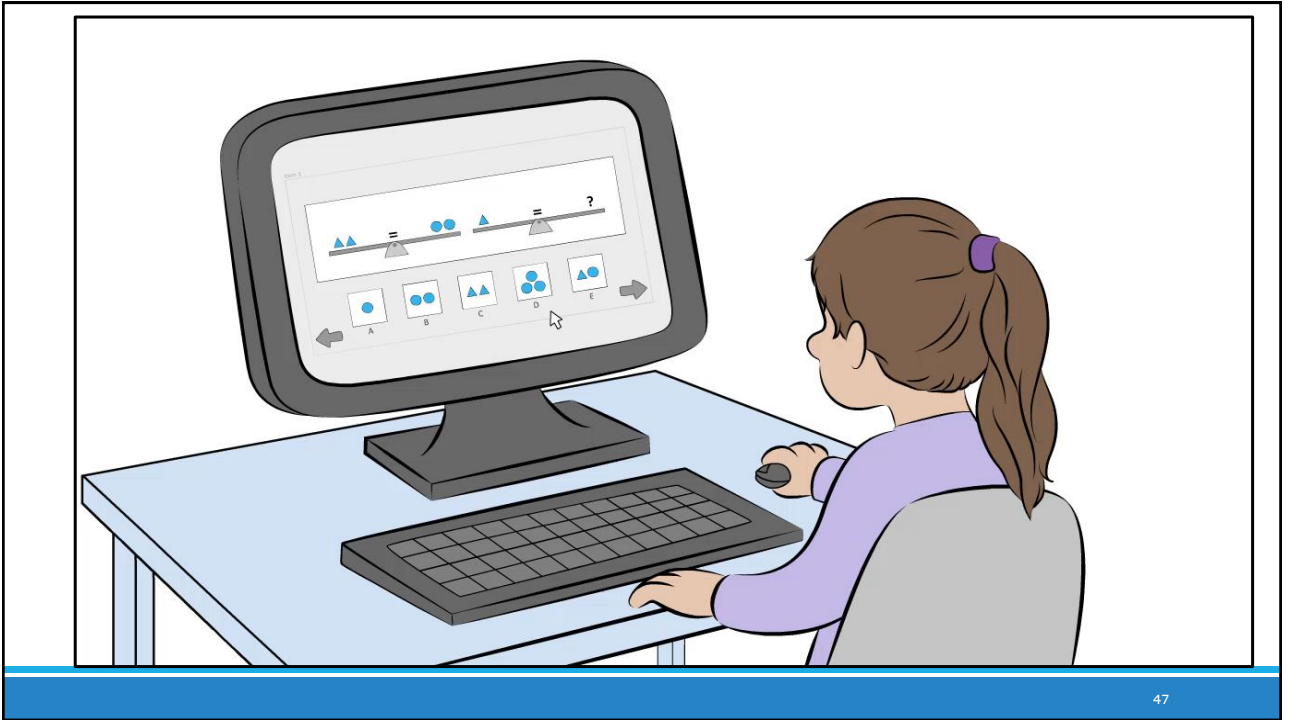
- These items demand analysis of sequences of numbers or relationships among a group of numbers. For example, 1 is to 2 (a difference of 1) as 3 is to ... 4. Alternatively, the items can be solved by simply recognizing that the when analyzed vertically, 1 becomes 3, so 2 should become 4.
- These items test a person's ability to understand relationships and patterns involving numbers, just as understanding relationships among shapes in the NAT-Nonverbal or verbal categories in the NAT-Verbal.



Authors: Jack Naglieri & Kim Lansdowne

46

46



47

## Quantitative Pilot Study Results (2019)

- **SAMPLE**
  - **2,841** That closely matches the US population on key demographics
- **GENDER**
  - No difference between **males** and **females** for raw score across all forms
- **RACE/ETHNICITY**
  - No differences among **White, Black, & Hispanic** for raw score across all forms
- **PARENTAL EDUCATION LEVEL**
  - No differences among five education levels (**No high school diploma; High School graduate; Some college/Associate's degree; Bachelor's degree; Graduate/professional degree**) for raw score across all forms

48

48



## Naglieri General Ability Tests Release



- The Verbal, Nonverbal and Quantitative tests will be released in summer of 2021 for application using local norms

**Introducing a New Generation of Measures**

Putting Fairness, Equity, and Representation  
First in Gifted & Talented Education

**COMING  
2021/2022  
SCHOOL YEAR!**

**MHS**  
Measures of Human Skills

49

# How Best to Use These Tests

Final Thoughts

50

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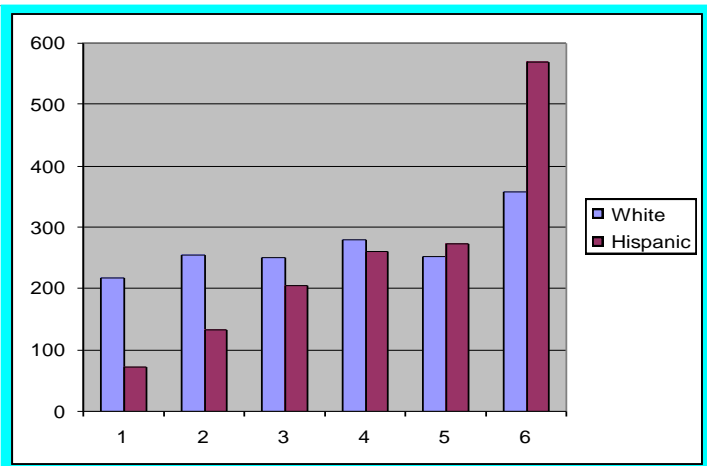
# How to Equitably Identify Gifted

- Do **universal ASSESSMENT** with ability tests that do not require knowledge of English and local norms
- Naglieri nonverbal has been shown to be an efficient way to test a large number of students for gifted programs
- Adding Verbal and Quantitative tests that do not demand knowledge of English will increase participation of under-served populations
- These tests will also be useful when using a matrix to avoid problems illustrated in the U-46 court case

51

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

Numbers of  
White and  
Hispanic gifted  
student  
populations  
between 2000-  
2006



52

## Gifted Identification

- WE CAN devise Verbal and Quantitative tests that can be solved regardless of the language a student speaks with nonverbal directions and no verbal expression required...AND add a Nonverbal tests to provide an equitable approach to assessment.

53

53



Any Questions

54

54

## *Equitable Identification of Gifted Students*

