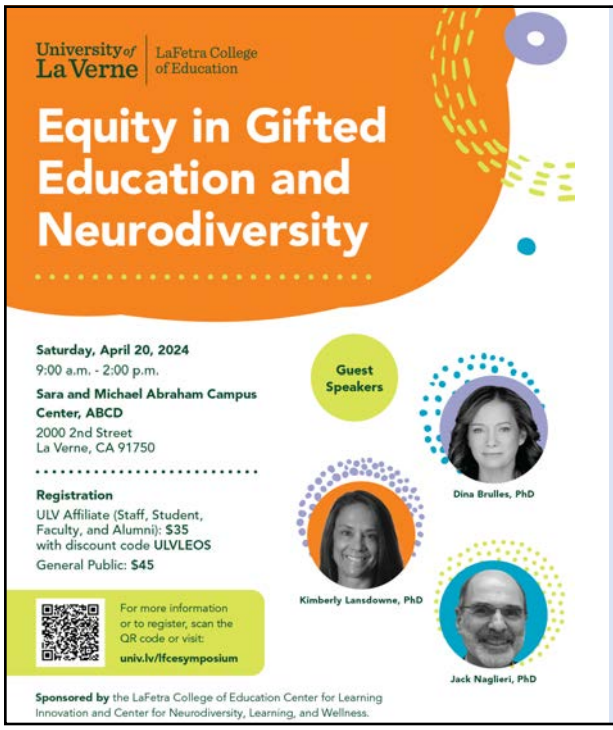

SYMPOSIUM AGENDA

Equity in Gifted Education and Neurodiversity

Introducing the Naglieri General Ability Tests: Verbal, Nonverbal and Quantitative

9:00 AM - Welcome and Introductions

9:15-11:30 Equitable Assessment of Gifted Students

- Gifted 101
- Traditional intelligence tests and equity
- The Naglieri General Ability Tests: Verbal, Nonverbal and Quantitative.
- Ensuring equitable identification of all gifted students

11:30 - 12:30 - Lunch

12:30 - 1:40 - Breakout Sessions: Attendees choose a session.

PM Session A - Providing Gifted Services

- Defining and understanding the differences between national and local norms
- Determining when to use national and/or local norms
- Understanding how scores are displayed and interpreted for the different norms
- Exploring gifted programming options
- Building inclusive and sustainable services
- Teaching diverse gifted learners

PM Session B - Twice-exceptional Students

- A simple method to detect neurodiversity and twice exceptional gifted students
- PASS neurocognitive processes strengths and weaknesses and achievement
- Using PASS scores to guide instructional decisions

1:45 - 2:00 - Whole Group Debrief

1

Equity in Gifted Education and Neurodiversity

Introducing the Naglieri General Ability Tests: Verbal, Nonverbal and Quantitative

Jack A. Naglieri Dina Brulles Kim Lansdowne
jnaglieri@gmail.com dbrulles@gmail.com Kimberly.Lansdowne@asu.edu

Websites:
NaglieriGiftedTests.com & JackNaglieri.com

Naglieri Verbal Nonverbal Quantitative General Ability Tests

2

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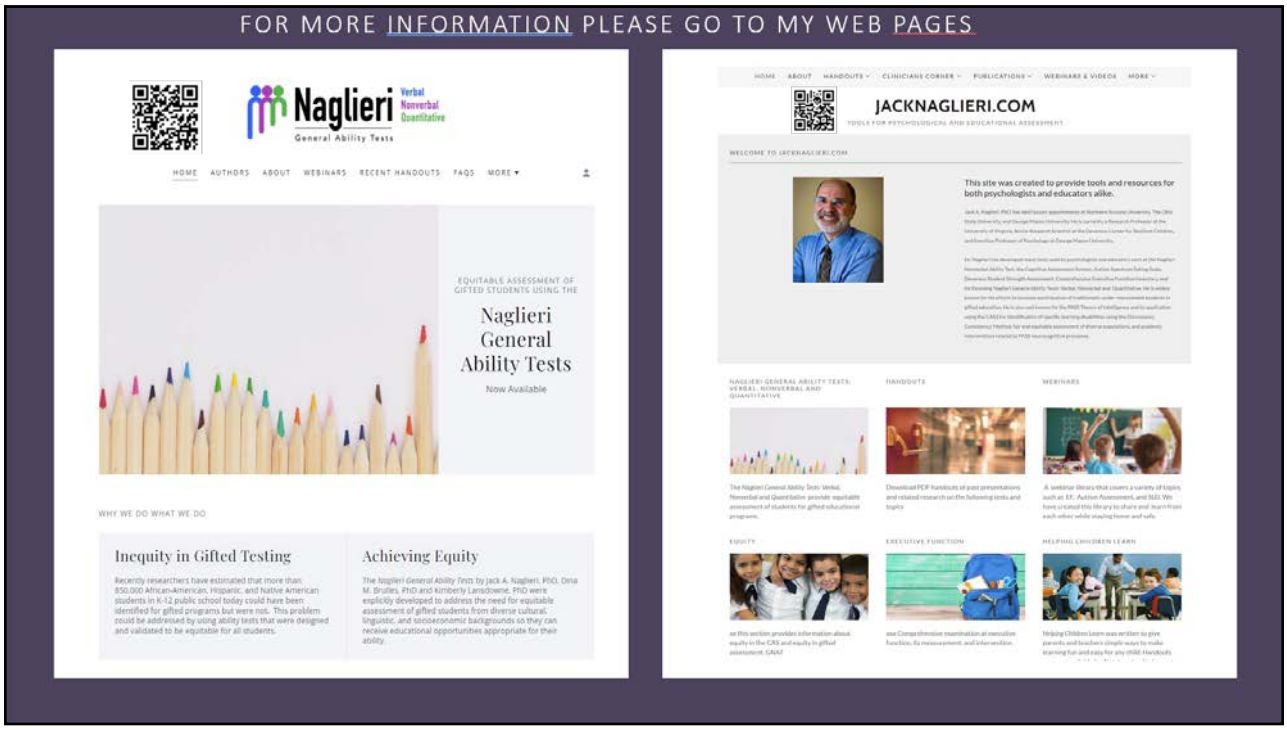

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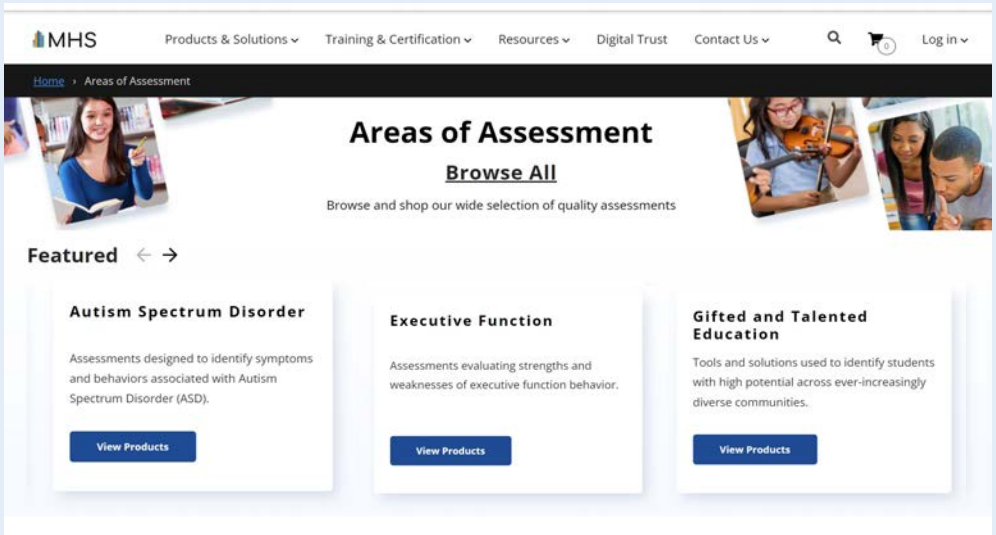

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Core Group Discussion → Deeper Learning

- **C**oach – Help the group decide what to do
- **O**rganizer – Have your group discuss the case of Manuel
- **R**ecorder – Keep notes and speak for the group
- **E**nergizer – Focus the group !

5

5

1. Why are we here?
2. What did we discover?
3. What solution did we create?

6

6

One Definition of Gifted & Talented

- "Giftedness designates the possession and use of untrained and spontaneously expressed natural abilities *(called aptitudes or gifts),* in at least one ability domain *(e.g. intellectual, creative, socio-affective, perceptual/motor, and 'others')…"*
- "By contrast, 'talent' designates the superior mastery of systematically developed abilities *(or skills)* and knowledge in at least one field of human activity."

Francois Gagné

7

A Few Differences Between a...
Bright Child & Gifted Child

Bright Child	Gifted Child
Knows the answer	Asks questions
Is interested	Is highly curious
Works hard	Plays around, yet tests well
Answers the questions	Discusses in detail, elaborates
Top of the group	Beyond the group
Learns with ease	Already knows
Understands ideas	Constructs abstractions
6-8 Repetitions for mastery	1-2 Repetitions for mastery
Grasps the meaning	Draws inferences
Completes the assignments	Initiates projects
Is receptive	Is intense
Copies accurately	Creates a new design
Enjoys school	Enjoys learning
Enjoys straightforward, sequential learning	Thrives on complexity

8

8

Profiles of Gifted Learners

- Creatively gifted people
- Gifted Perfectionists
- Highly and profoundly gifted
- Culturally & linguistically diverse gifted students
- Twice-exceptional gifted students
- Non-productive gifted students
- High ability / high achieving students

9

9

1. Why are we here?
2. What did we discover?
3. What solution did we create?

10

10

Did you know…

- The origin of the most widely used intelligence tests?
- That the most widely used group and individual intelligence tests measure vocabulary knowledge and include Arithmetic word problems like those found on achievement tests?
- Does that feel right?

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Traditional IQ and Achievement Tests

- Working as a school psychologist in 1975 I noticed that items on the WISC we were VERY similar to parts of the achievement tests
  - The *Peabody Individual Achievement Test* (1970) had a General Information and Arithmetic subtests JUST LIKE THE WISC!
  - THAT DID NOT MAKE SENSE
  - In 1977 → UGA for Ph.D. With Alan Kaufman who said VIQ=achievement

1975 Charles Champagne Elementary, Bethpage, NY

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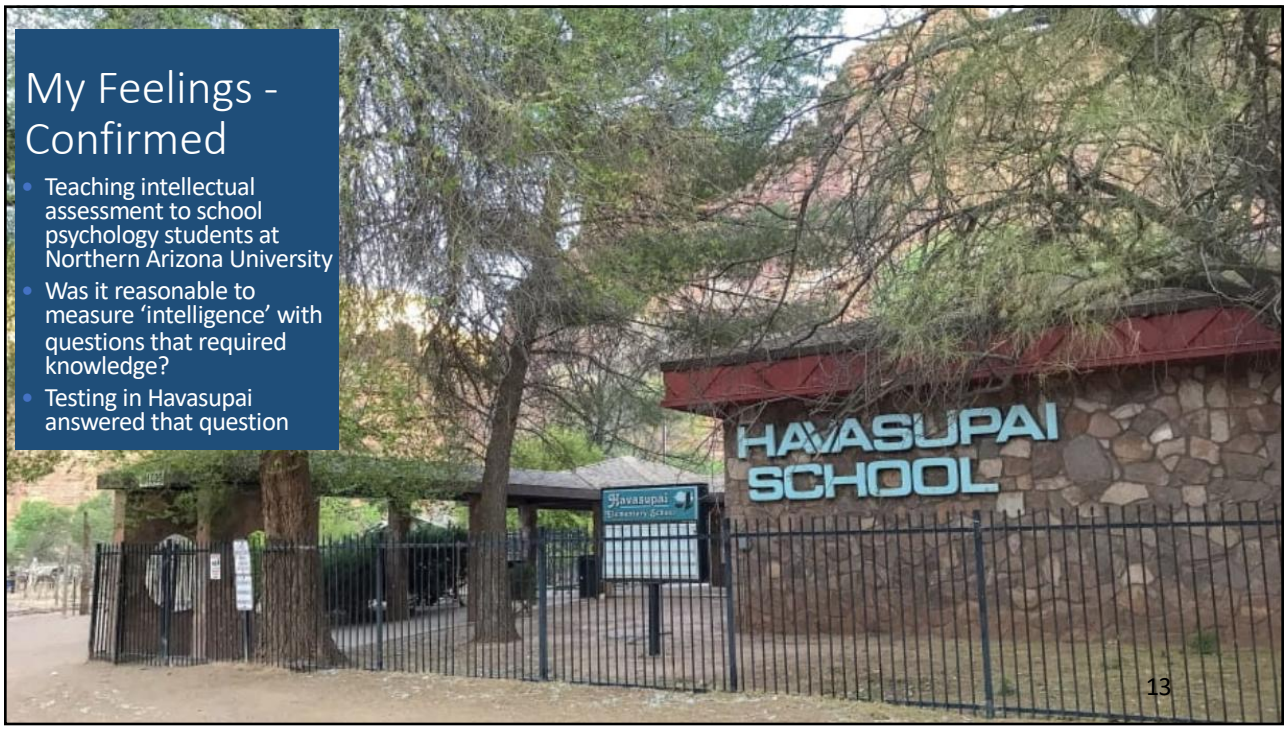
My Feelings - Confirmed

- Teaching intellectual assessment to school psychology students at Northern Arizona University
- Was it reasonable to measure 'intelligence' with questions that required knowledge?
- Testing in Havasupai answered that question



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1981

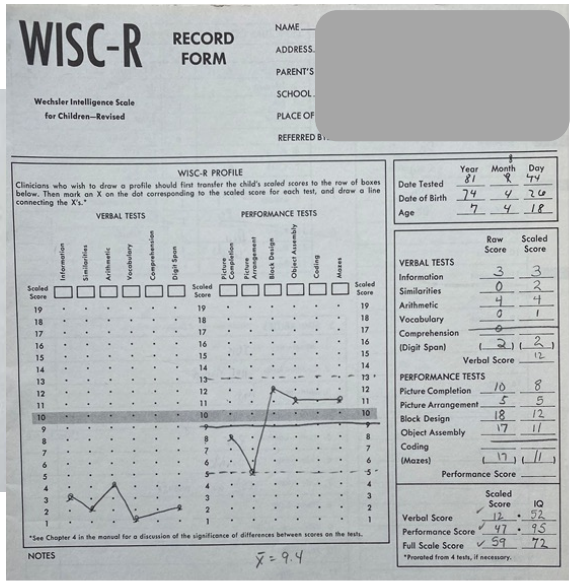
Test Results and Interpretations:

On the WISC-R, Amanda earned a Performance IQ of 95±7 which falls in the average range of intelligence and at the 37th percentile rank in comparison to the children her age in the standardization sample. In contrast to this score of average non-verbal intelligence was her Verbal IQ of 52±7. This score is quite low and indicates that her level of facility with the English language falls at about the 1st percentile rank. This score can NOT be considered an estimate of verbal intelligence because Amanda speaks mostly Supai and little English. Due to the large difference between these scores, no Full Scale IQ was computed.

Within the WISC-R a clear pattern emerged: Amanda performed well on tasks that required little or no English language comprehension or expression, and poorly on all tasks which did require these linguistic skills. In fact, even if a task was visual and non-verbal, but required English language comprehension of instructions, she performed more poorly.

WISC-V Full Scale

Verbal Comprehension	Visual Spatial	Fluid Reasoning	Working Memory	Processing Speed
Similarities	Block Design	Matrix Reasoning	Digit Span	Coding
Vocabulary	Visual Puzzles	Figure Weights	Picture Span	Symbol Search
Information		Picture Concepts	Letter–Number Sequencing	Cancellation
Comprehension		Arithmetic		



Naglieri, J. A. (1982). Does the WISC-R measure verbal intelligence for non-English speaking children? *Psychology in the Schools, 19*, 478-479.

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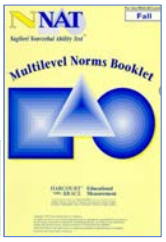
Naglieri's Nonverbal Tests: 1985 to Present

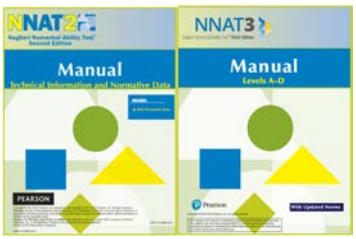
- **Research on Six Versions of the Naglieri Nonverbal Tests**

MAT Short and Expanded Forms 1985



Naglieri Nonverbal Ability Test 1997

NNAT –Individual, 2003



NNAT -2 2008 NNAT3 2016

Each of these versions of the NNAT showed similar scores by RACE, ETHNICITY, & SEX and had strong correlation with achievement

This research convinced me that measuring intelligence using test questions that measured how well a student can think was a valid and equitable way to measure general intelligence 'g'.

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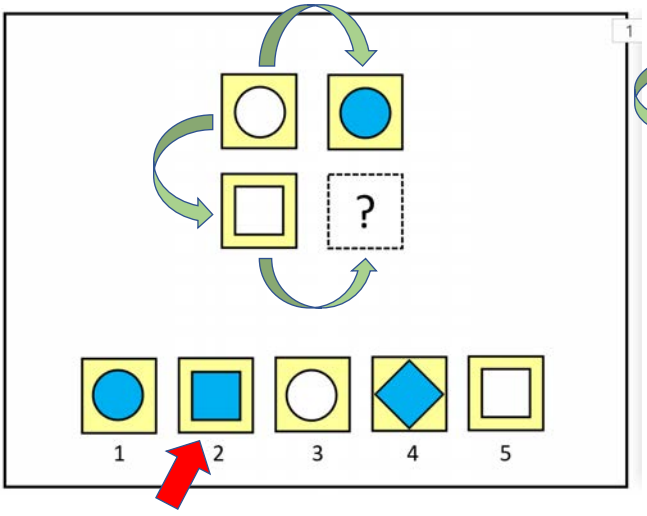
Tests that Measure Thinking or Knowing?



Girl is woman as boy is to man ?

3 is to 6 as 5 is to 10 ?

C^7 is to F as E^7 is to A ?

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How to Evaluate Thinking vs Knowing

What does the examinee have to know to complete a task?

- This is dependent on *instruction*

How does the student have to think to complete a task?

- This is dependent **seeing how ideas or things are related to one another** and some tasks just demand remembering

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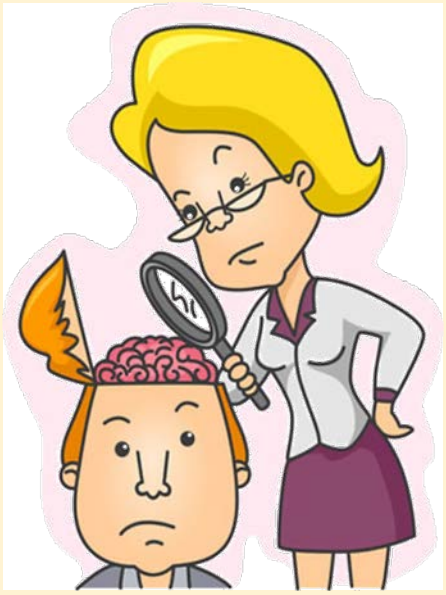
Why do we measure intelligence the way we do?

The History of IQ tests



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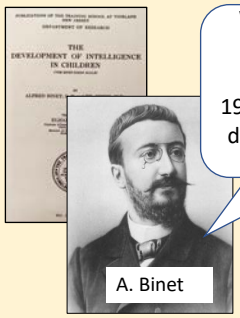
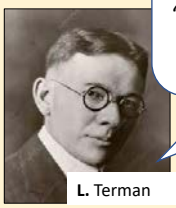
Binet→ Stanford-Binet → Army Mental Tests → WISC, CogAT, Olsat



A. Binet

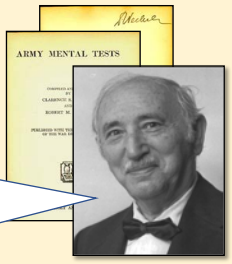
When working on the 1911 scale, Binet removed items from 1908 scale because 'they depended too much on school learning'



L. Terman

Terman added items dependent upon school learning in the 1916 Stanford-Binet because he believed 'intelligence at the verbal and abstract levels is the highest form of mental ability'.

Arthur Otis (Terman's student) was instrumental in the development of the U.S. Army Alpha (Verbal & Quantitative) and Beta (Nonverbal) and the Otis-Lennon Ability Test



Wechsler based his intelligence test on the U.S. Army Mental Tests (Verbal, Quantitative & Nonverbal)

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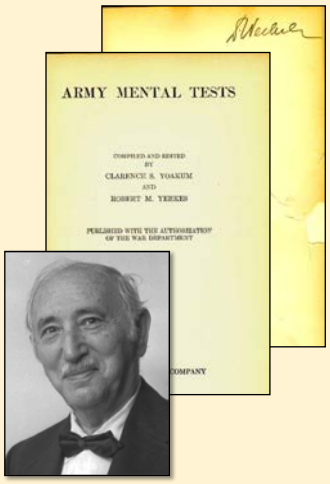
Alpha & Beta → Wechsler



- **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 IQ (Knowledge)

Nonverbal IQ (Thinking)

WISC, WJ CogAT & Otis-Lennon

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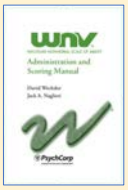
Wechsler's View of General ability

- 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)"

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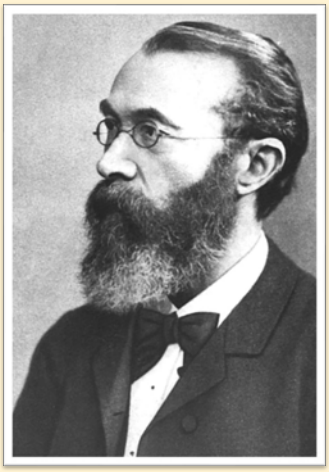
CONCEPT OF GENERAL INTELLIGENCE 61

The Criteria of a Test of Intelligence. — Influenced both by the theoretical discussion of general intelligence and by the empirical work of testing, we have arrived at certain requirements for a good test of intelligence, which we may discuss under the four following headings:

1. *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 something that is commonly taught in school is not desirable, because those children who have reached the particular grade in which this is generally taught have memorized this fact, whereas other children of equal or greater intelligence may have had no opportunity to learn this same fact, simply because they may not have reached this particular grade in their school work. To ask the question, "Who discovered America?" would be indicative of the school progress or general cultural environment of the child rather than of his general intelligence. Failure to answer might indeed be due to lack of intelligence in the case of school children of a certain grade in which this had been a matter of instruction, but on the other hand a very intelligent child might fail to answer owing to the fact of his not being in the grade in which this was taught.

Pintner
(Intelligence Testing, 1923)

- This is a social justice issue for those from disadvantaged communities and those with limited education



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Woodcock-Johnson Cognitive & Achievement Tests (CHC)

Very Similar Items on "Different" Tests

Cognitive: Oral Vocabulary #1 subtest has a question like this: Tell me another work for hot. Correct: Warm	Cognitive: Test #17B Reading Vocabulary-Antonyms subtest has a question like this: Tell me the opposite of up Correct: down
Achievement: Reading Vocabulary subtest #17 has a question like this: Tell me another work for Warm. Correct: Hot	Achievement Test #1C Verbal Comprehension-Antonyms has a question like this: Tell me the opposite of down. Correct: up

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Knowledge is Included in "Ability" Tests

Stanford-Binet-5	WISC-V	WJ-IV	KABC-II	OLSAT	CogAT
• Verbal • Knowledge • Quantitative Reasoning • Vocabulary • Verbal Analogies	• Verbal Comprehension Vocabulary, Similarities, Information & Comprehension • Fluid Reasoning Figure Weights, Arithmetic	• Comprehension Knowledge: Vocabulary & General Information • Fluid Reasoning: Number Series & Concept Formation • Auditory Processing: Phonological Processing	• Knowledge / GC • Riddles, • Expressive Vocabulary, • Verbal Knowledge	• Verbal • Following directions • Verbal Reasoning • Quantitative • Verbal Arithmetic Reasoning	• Verbal Scale • Analogies • Sentence Completion • Verbal Classification • Quantitative • 45 pages of oral instructions

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What is the Practical Impact of intelligence tests that are confounded by knowledge?

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APA Apology for Promoting Racism

- 'APA recognizes the **roles of psychology in promoting…racism, and the harms that have been inflicted on communities of colo**r … and the ways measurement of intelligence has been systematically used to create the ideology of White supremacy'
- Throughout the 1900s prominent **psychologists involved in IQ test development supported eugenics**

Psychology … **helped to create, express, and sustain them, continues to bear their indelible imprint, and often continues to publish research that conforms with White racial hierarchy**

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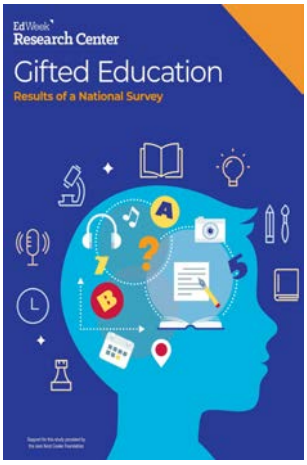
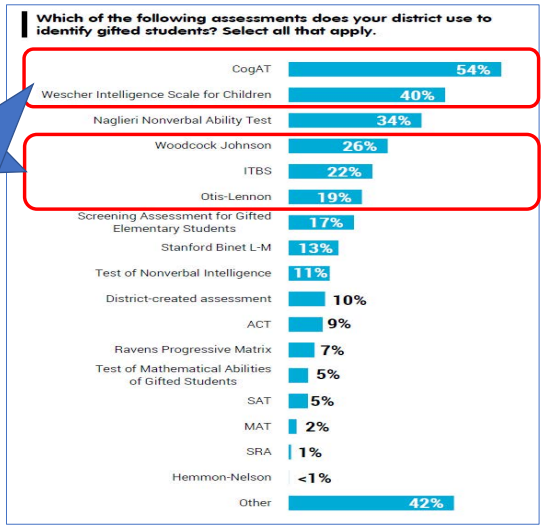
National Survey of Gifted Education



These tests have verbal and quantitative questions and lengthy verbal directions



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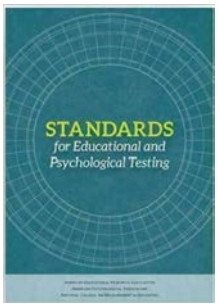
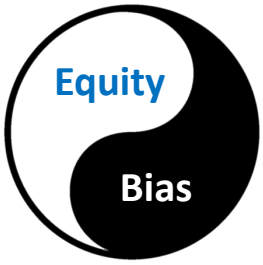
Test Bias vs Test Equity

According to the *Standards for Educational and Psychological Testing* (AERA, APA, NCME, 2014) Psychometric TEST BIAS and EQUITY are two different ways of measuring test fairness.



- … **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 knowing the answers) **even if there is no evidence of psychometric test bias.**
- Evidence of EQUITY is examined by test content and mean score differences



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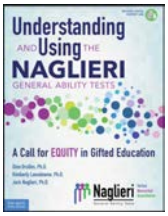
Race and Ethnic Differences for *Traditional* and *Second-Generation* Intelligence Tests



	By Race	By Ethnicity
TRADITIONAL Tests that require knowledge	**9.4**	**6.4**
Otis-Lennon School Ability Test (district wide)	13.6	-
Stanford-Binet IV (normative sample)	12.6	-
CogAT7 Nonverbal	11.8	7.6
WISC-V (normative sample)	11.6	-
WJ- III (normative sample)	10.9	10.7
K-ABC II Fluid-Crystallized Index	9.4	9.8
WISC-V (statistical controls normative sample)	8.7	5.4
K-ABC II Mental Processing Index	8.1	8.2
CogAT-Total (V, Q & NV)	7.0	4.5
CogAT7 - Verbal	6.6	5.3
CogAT- Nonverbal	6.4	2.9
CogAT7-Quantitative	5.6	3.6
SECOND GENERATION Tests that require minimal knowledge	**4.5**	**2.5**
CAS-2 (normative sample)	6.3	4.5
Naglieri General Ability Test-Verbal (Ns= 392 & 709)	6.2	1.0
Naglieri General Ability Test-Quantitative (Ns= 392 & 709)	5.5	4.4
CAS (statistical controls normative sample)	4.8	4.8
Naglieri General Ability Test-Nonverbal (Ns= 392 & 709)	4.4	0.3
CAS-2 (statistical controls normative sample)	4.3	1.8
Naglieri General Ability Test-Quantitative (N = 6,098)	4.3	2.9
NNAT (matched samples)	4.2	2.8
Naglieri General Ability Test-Verbal (N= 5,739)	4.2	1.3
Naglieri General Ability Test-Nonverbal (N=6,887)	3.5	0.9
CAS-2 Brief (normative samples)	2.0	2.8

Note: The results summarized here were reported for the Otis-Lennon School Ability Test by Avant and O'Neal (1986); Stanford-Binet IV by Wasserman (2000); Woodcock-Johnson III race differences by Edwards and Oakland (2006) and ethnic differences by Sotelo-Dynega, Ortiz, Flanagan, and Chaplin (2013); CogAT7 by Carman, Walther and Bartsch (2018) and Lohman (2016), WISC-V by Kaufman, Raiford, and Coalson (2016); Kaufman Assessment Battery for Children-II by Lichtenberger, Volker, Kaufman & Kaufman, (2006) and Scheiber, C., Kaufman, A.S. Which of the Three KABC-II Global Scores is the Least Biased?. Journal of Pediatric Neuropsychology 1, 21–35 (2015); CAS by Naglieri, Rojahn, Matto, and Aquilino (2005); CAS-2 and CAS2:Brief by Naglieri, Das, and Goldstein (2014a and 2014b), Naglieri Nonverbal Ability Test by Naglieri and Ronning (2000), Naglieri General Ability Tests by Naglieri, Brulles, and Lansdowne (2022 & 2024) and Selvamenan et al., 2024 (in press). UPDATED 3.6.24

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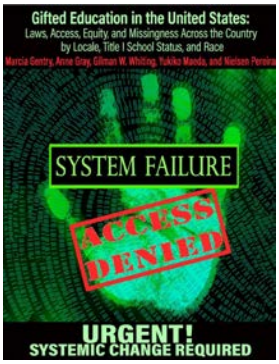
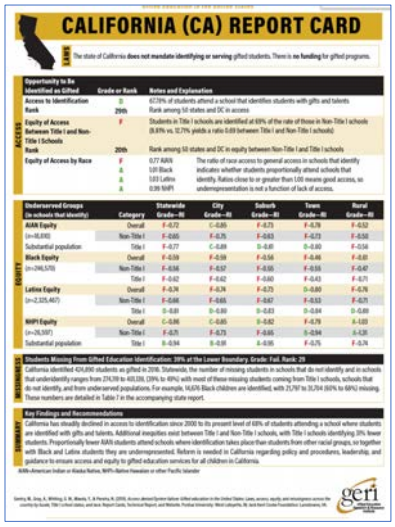
Access Denied: Gentry et. al. (2019)





Key Findings

- Underrepresentation of AIAN, Black, Latinx, and NHPI students is widespread and persistent across the United States, continuing a trend of more than 40 years; whereas, Asian and White students are consistently well-represented.
- Students in Rural and Town locales are more likely to be less proportionally represented than their Suburb and City counterparts.

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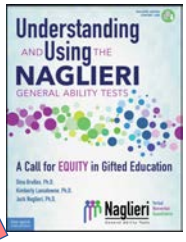
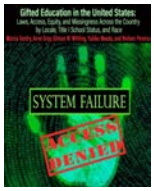
Numbers of Gifted Students Missed = 1,266,708

Gifted Enrollment by Race and Ethnicity as of 2020 (updated 2024).				
	N in Public Education K-12 in 2020	N Potentially Gifted (8%; 92 percentile)	N Students in gifted programs	Difference Between Potential and Identified
White	23,834,458	1,906,757	1,937,350	30,593
Black	7,754,506	620,360	330,774	-289,586
Hispanic	14,337,467	1,146,997	600,498	-546,499
Native Americans	748,000	59,840	26,700	-33,140
Two or More Races	1,641,817	131,345	105,371	-25,974
Total Non-Whites	24,481,790	1,958,543	1,063,343	**-895,200**

1. Representation Ratio formula: N in Gifted Education / Potential N in Gifted Education.
2. Total Enrollment data from Table 203.60. Enrollment and percentage distribution of enrollment in public elementary and secondary schools, by race/ethnicity and level of education: Fall 1999 through fall 2027. https://nces.ed.gov/programs/digest/d17/tables/dt17_203.60.asp
3. Gifted Enrollment data from Table 204.80. Number of public-school students enrolled in gifted and talented programs, by sex, race/ethnicity, and state: Selected years, 2004 through 2013–14. https://nces.ed.gov/programs/digest/d17/tables/dt17_204.80.asp
4. From: Brulles, D., Lansdowne, K. & Naglieri, J. A. (2022). *Understanding and Using the Naglieri General Ability Tests: A Call to Equity in Gifted Education*. Minneapolis, MN: Free Spirit Publishing.
5. Native American data from: Steven C. Haas, Associate Director, Indigenous Students Leap Ahead (ISLA) Project.

Percent of Schools that do not Identify	41.5%
Additional non-white gifted students = 41.5% of 895,200	N = 371,508
Total non-white gifted students missed	**N = 1,266,708**





895,200

371,508

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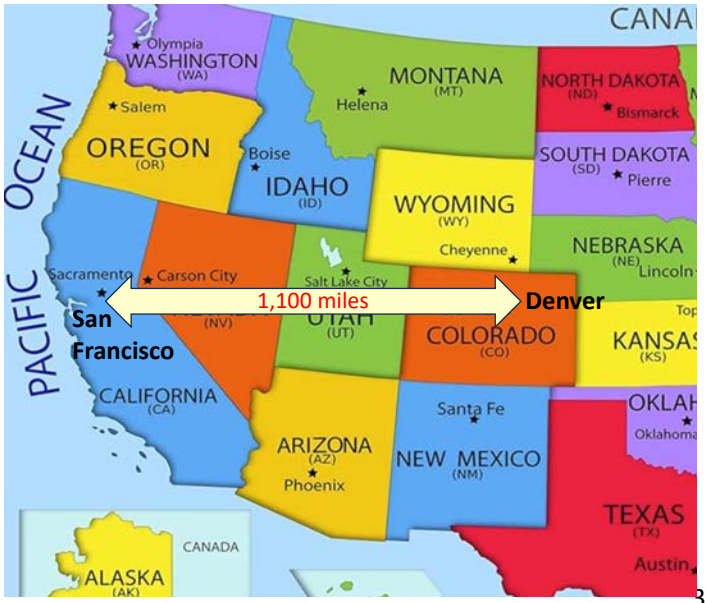
Numbers of Students Missed Would Connect Denver to San Francisco !

Each Image = 20,000



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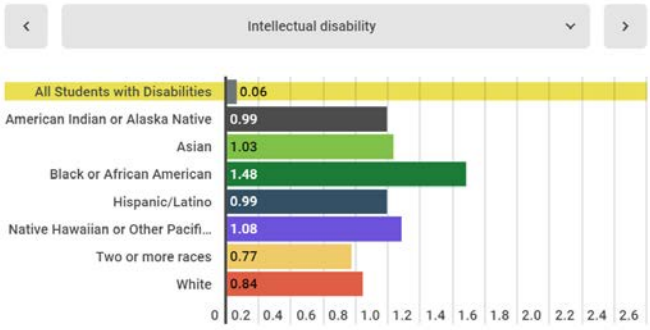
OSEP Office of Special Education Programs
Office of Special Education and Rehabilitative Services

OSEP Fast Facts: Race and Ethnicity of Children with Disabilities Served under IDEA Part B

For the purposes of this fact sheet, racial ethnic groups are defined in the IDEA Part B Child Count and Educational Environments for School Year 2019-2020, OSEP Data Documentation. https://www2.ed.gov/programs/osepidea/618-data/collection-documentation/data-documentation-files/part-b/child-count-and-educational-environment/idea-partb-childcountandedenvironment-2019-20.pdf

Risk Ratio of Students with Disabilities by Disability Category and by Specific Race and Ethnicity, Ages 5 (in kindergarten) through 21: SY 2019-20



The relative risk ratio of students with disabilities under IDEA by race and Ethnicity is the probability of a student with a disability being identified for intellectual disability. The higher the number, the larger the probability. Nationally, **Black Students are 1.48 times more likely to be identified with intellectual disability** compared to all students with disabilities.

https://sites.ed.gov/idea/osep-fast-facts-race-and-ethnicity-of-children-with-disabilities-served-under-idea-part-b/
https://ldaamerica.org/lda_today/disproportionate-identification-of-students-of-color-in-special-education/

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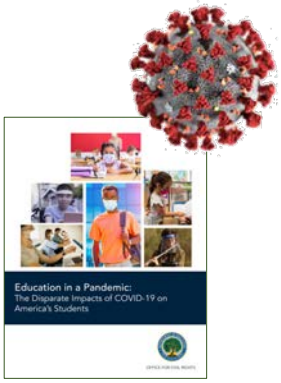
Academic Learning Loss & COVID

- COVID-19 has increased the impact of disparities in access and opportunity for students of color and they are even further behind than they were before.
- Their **scores on traditional intelligence tests** which demand knowledge **are even more inaccurate.**
- **Solutions**:
  - For traditional tests, use post-COVID norms only.
  - Use intelligence tests that are not dependent upon knowledge



Education in a Pandemic: The Disparate Impacts of COVID-19 on America's Students. US Dept. of Ed- Office of Civil Rights. June, 21, 2021. https://www2.ed.gov/about/offices/list/ocr/docs/20210608-impacts-of-covid19.p

34

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The test you choose determines the results you receive, the decisions you make, and the future of your students

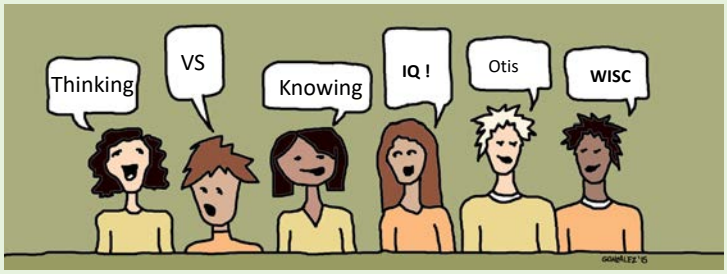
That is the *Practical Impact* of test selection

35

35

Core Group Discussion

- **What was the MOST important idea we shared so far**



36

36

15-minute break

37

37

1. Why are we here?
2. What did we discover?
3. What solution did we create?

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Reducing Under-representation of Minority Children in Gifted Education –

SENG 2004 Washington DC

Jack A. Naglieri, Ph.D.
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The Naglieri General Ability Tests: Verbal, Nonverbal and Quantitative

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Dina Brulles, Ph.D. dbrulles@gmail.com
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Publisher: MHS
Contact: Debbie.Roby@MHS.com
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Naglieri Verbal Nonverbal Quantitative
General Ability Tests

Learn More
NaglieriGiftedTests.com

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2016 – 2022 Developmental Process

Naglieri General Ability Tests

- We **explicitly made 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** using:
  - 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 removes the need for verbal expression.
  - Online (and paper) administration for group or individual assessment
  - Universal assessment using local and national norms

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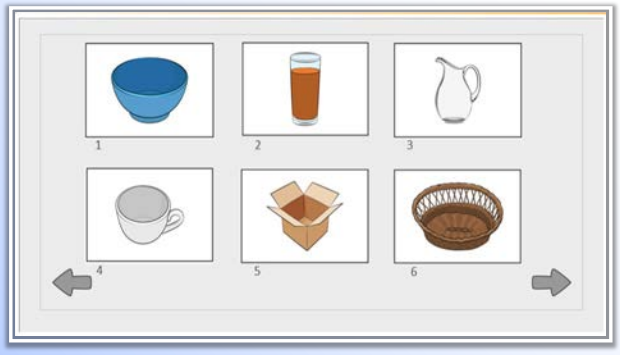
The **Naglieri-V measures general ability** using pictures of objects representing verbal concepts. The items are comprised of universally recognized pictures that do not rely on knowledge acquired in academic settings.

The student's task is to identify which of the six pictures does *not* represent the verbal concept shared by the other five.

The test items require close examination of *the relationships among the pictures*.



Naglieri General Ability Tests | Verbal

Naglieri General Ability Test – Verbal (Naglieri & Brulles)

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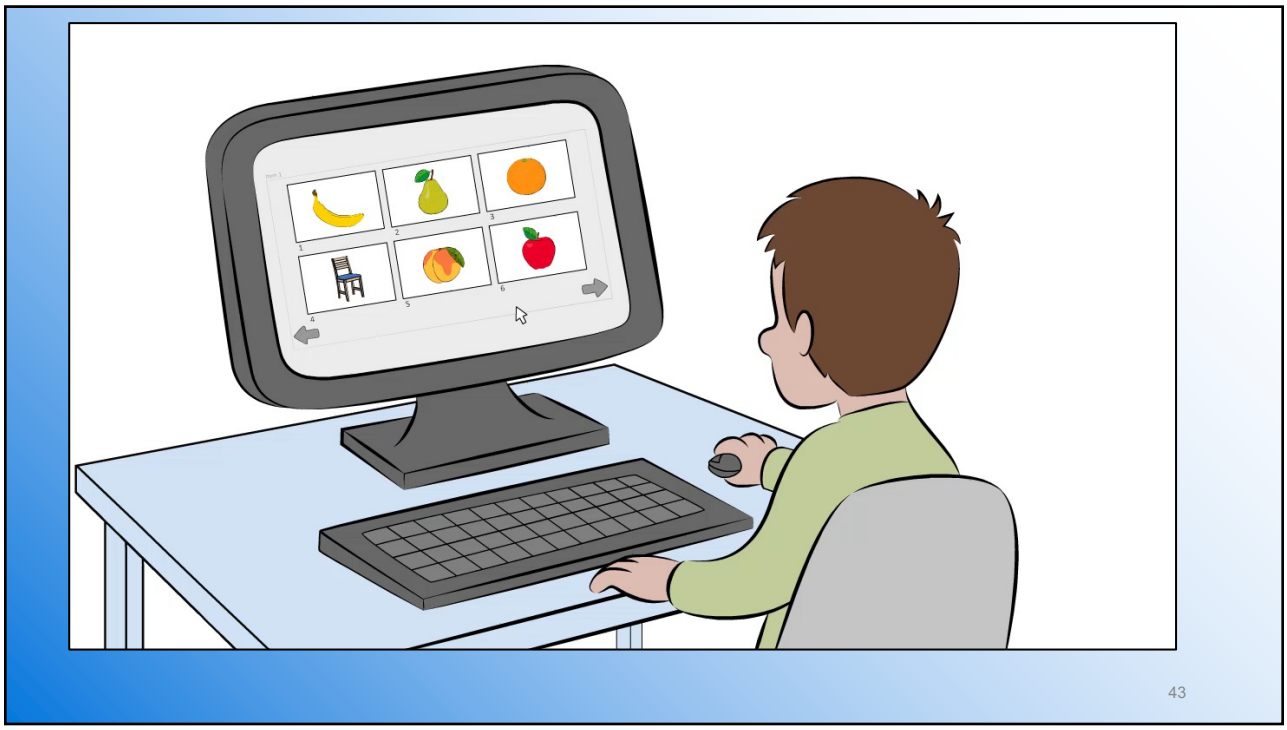

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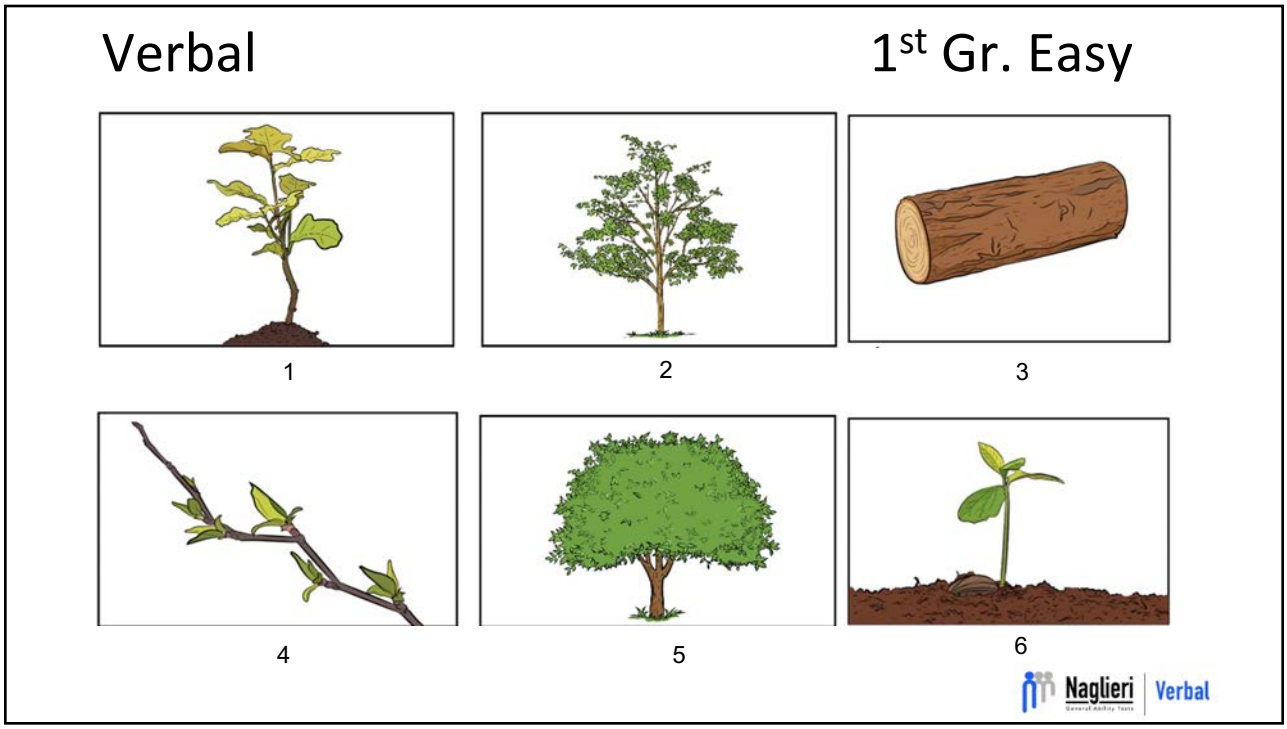
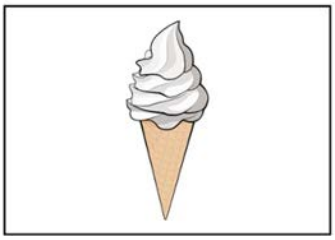


44

Verbal — 1st Gr. Hard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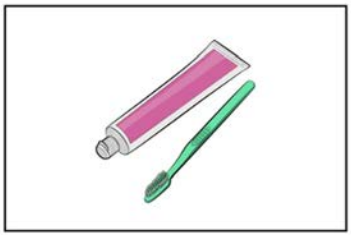
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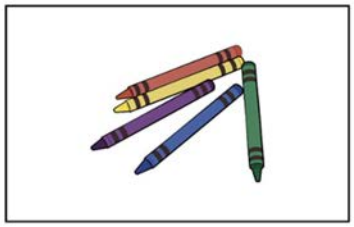
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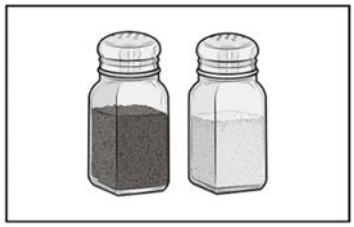
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Naglieri | Verbal

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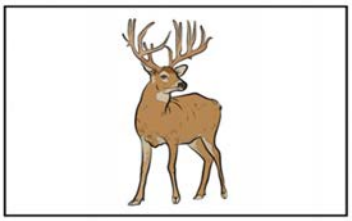
Verbal — 6th Gr. Easy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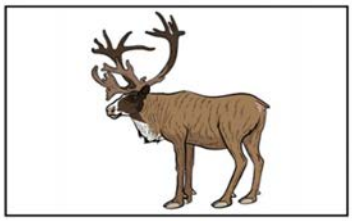
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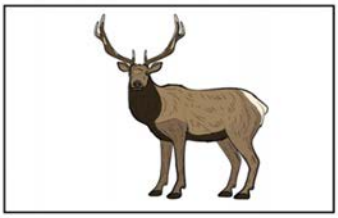
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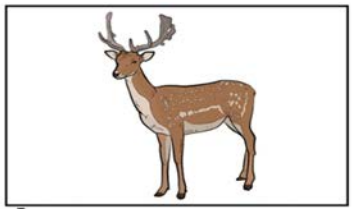
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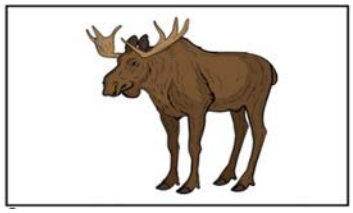
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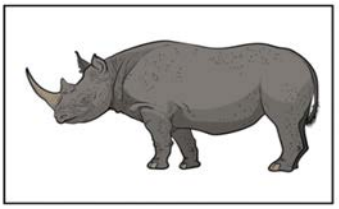
6

Naglieri | Verbal

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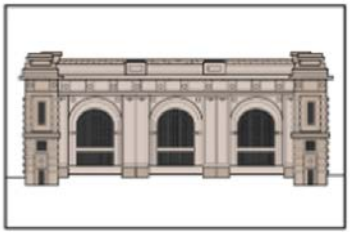
6th Gr. Hard


1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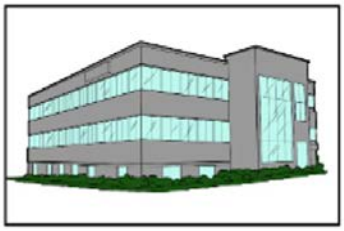
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6

Naglieri Verbal

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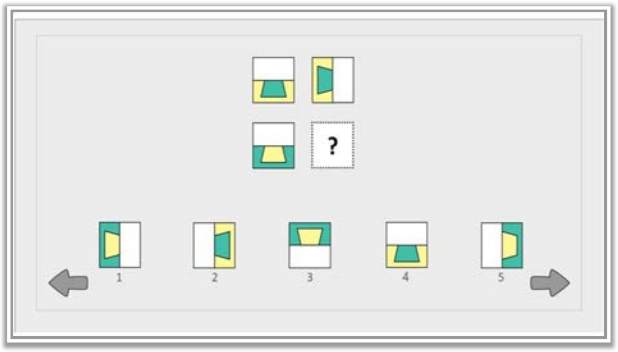
The **Naglieri-NV measures general ability** using questions that require a student to recognize the relationships among the shapes.

The structure of the items varies, but all items require that the student decipher the logic behind *the relationships among the shapes*, sequences, spatial orientations, patterns, and other distinguishing characteristics.

This nonverbal test is conceptually similar to the NNAT3 but it contains many NEW kinds of items not included before.



Naglieri Nonverbal

Naglieri General Ability Test – Nonverbal (Naglieri)

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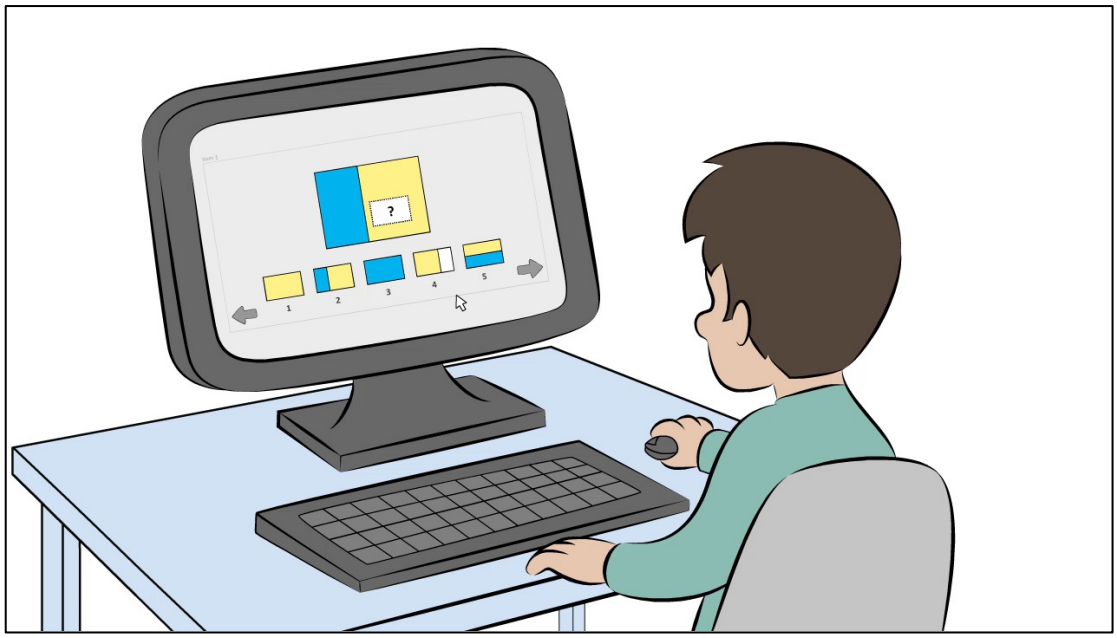

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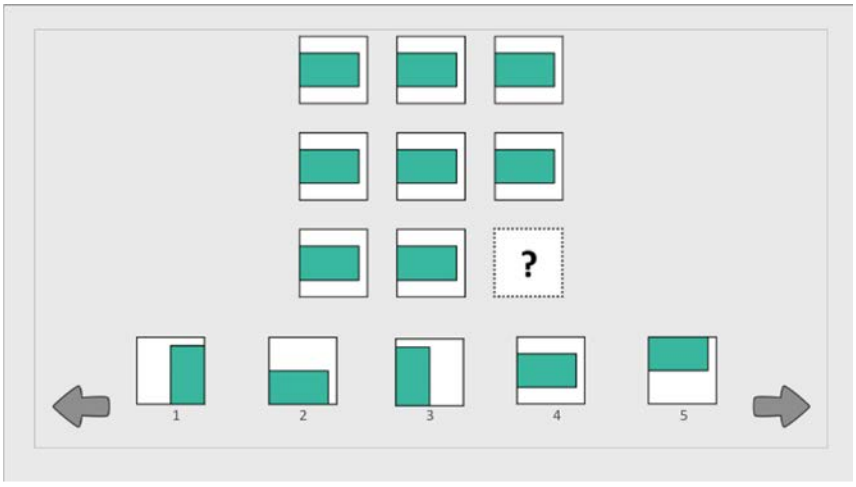
49

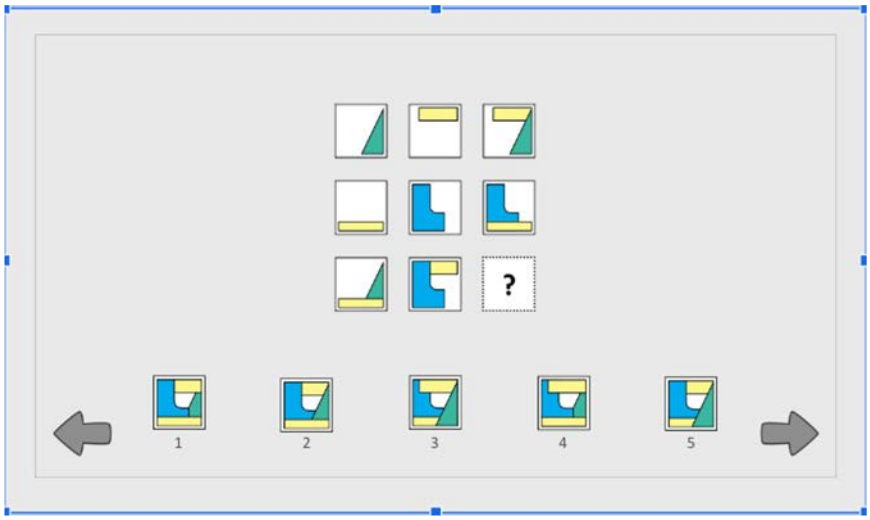
1st Gr. Easy



Naglieri Nonverbal

50

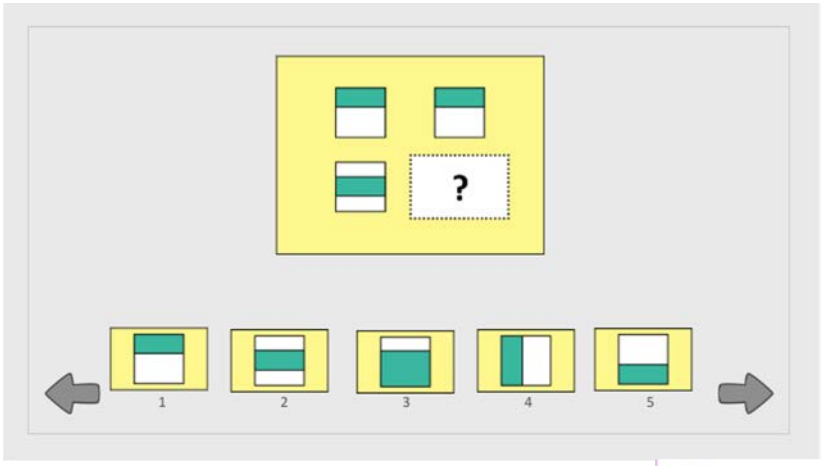
1st Gr. Hard



Naglieri Nonverbal

51

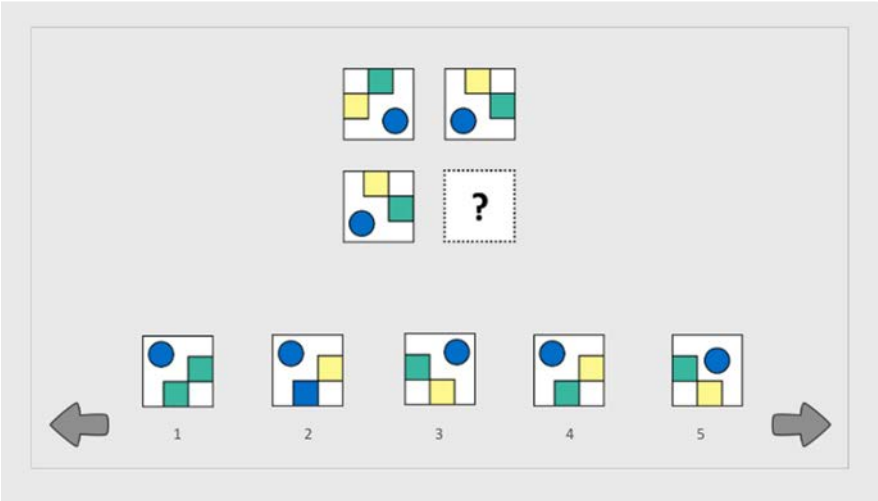
6th Gr. Easy



Naglieri Nonverbal

52

6th Gr. Hard



Naglieri | Nonverbal

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The **Naglieri-Q measures general ability** using numbers and/or symbols. Students must decipher the logic behind the relationships among the numbers and symbols to identify the answer.

Items require the student to determine equivalency of simple quantities, analyze a matrix of numbers and solve mathematical sequences.

Items require minimal academic knowledge, and the calculation requirements are simple.

The items have no verbal requirements (i.e., no math word problems) so that they can be solved regardless of the language used by the student.

Naglieri | Quantitative

Naglieri General Ability Test – Quantitative (Naglieri & Lansdowne)

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Naglieri General Ability Tests-Grade 1-Easy

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Naglieri General Ability Tests-Grade 1-Hard

Naglieri Quantitative

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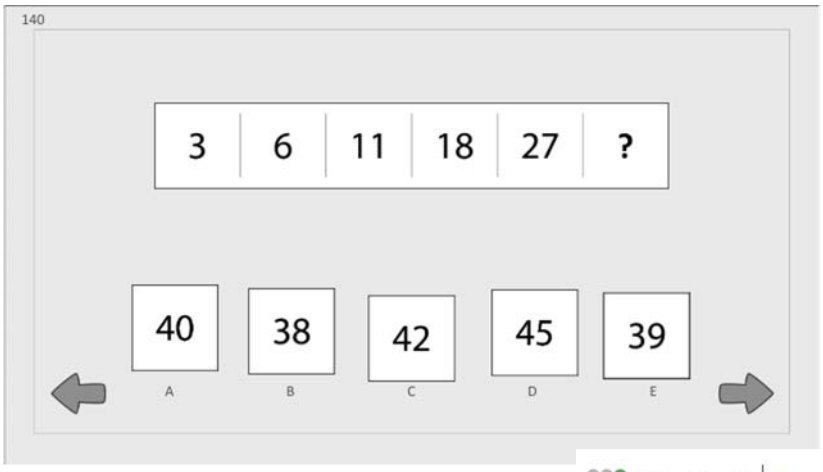
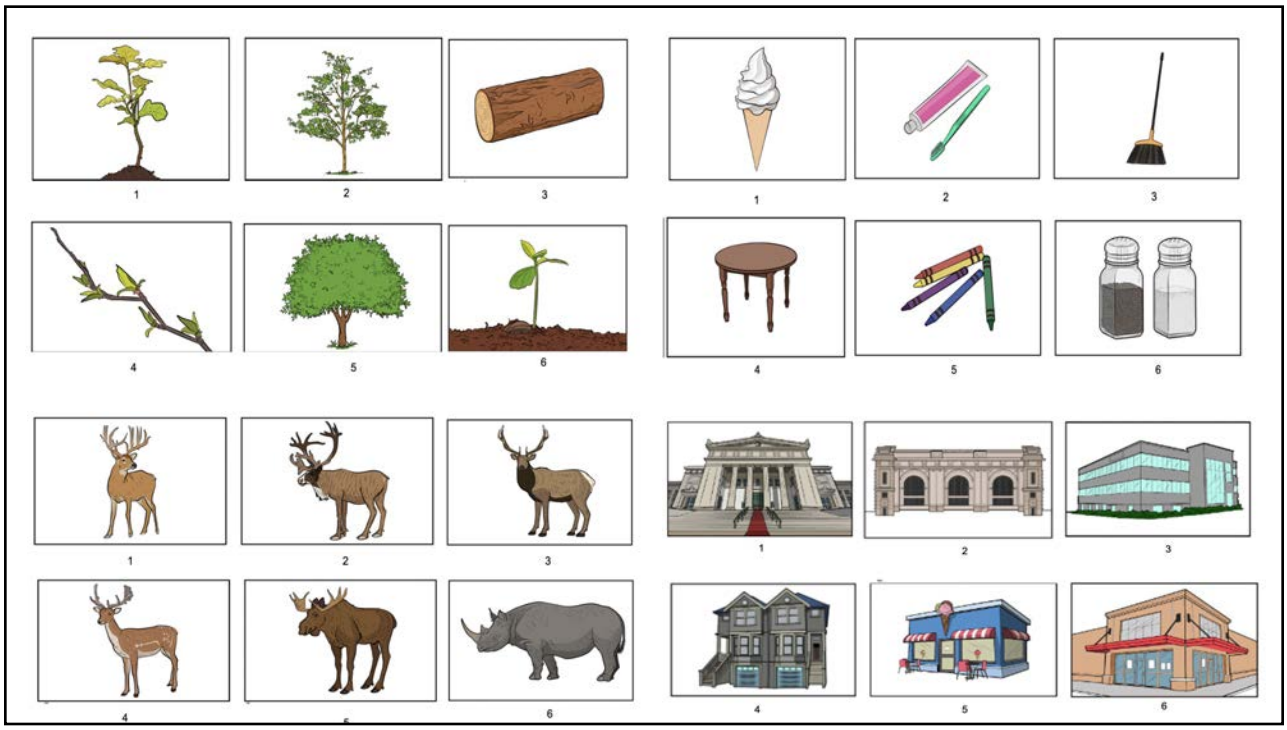
Naglieri General Ability Tests-Grade 6-Easy



Naglieri Quantitative

58



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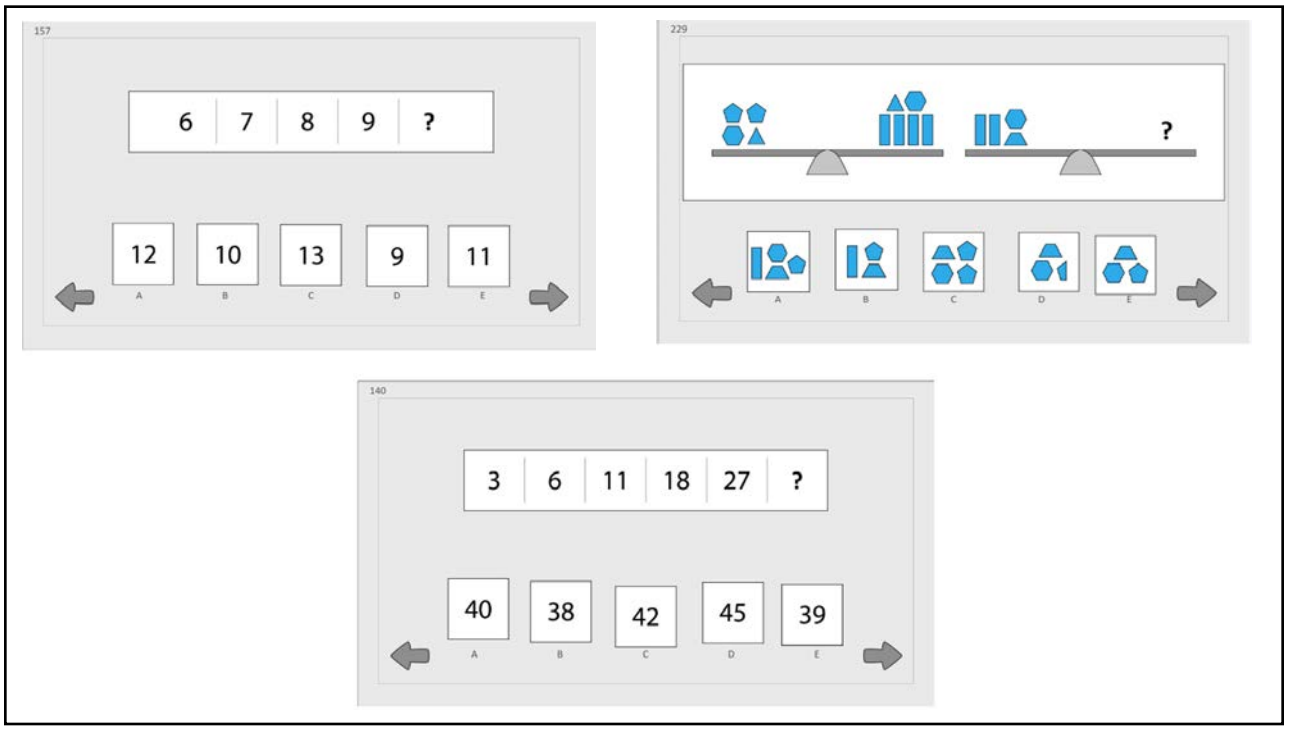
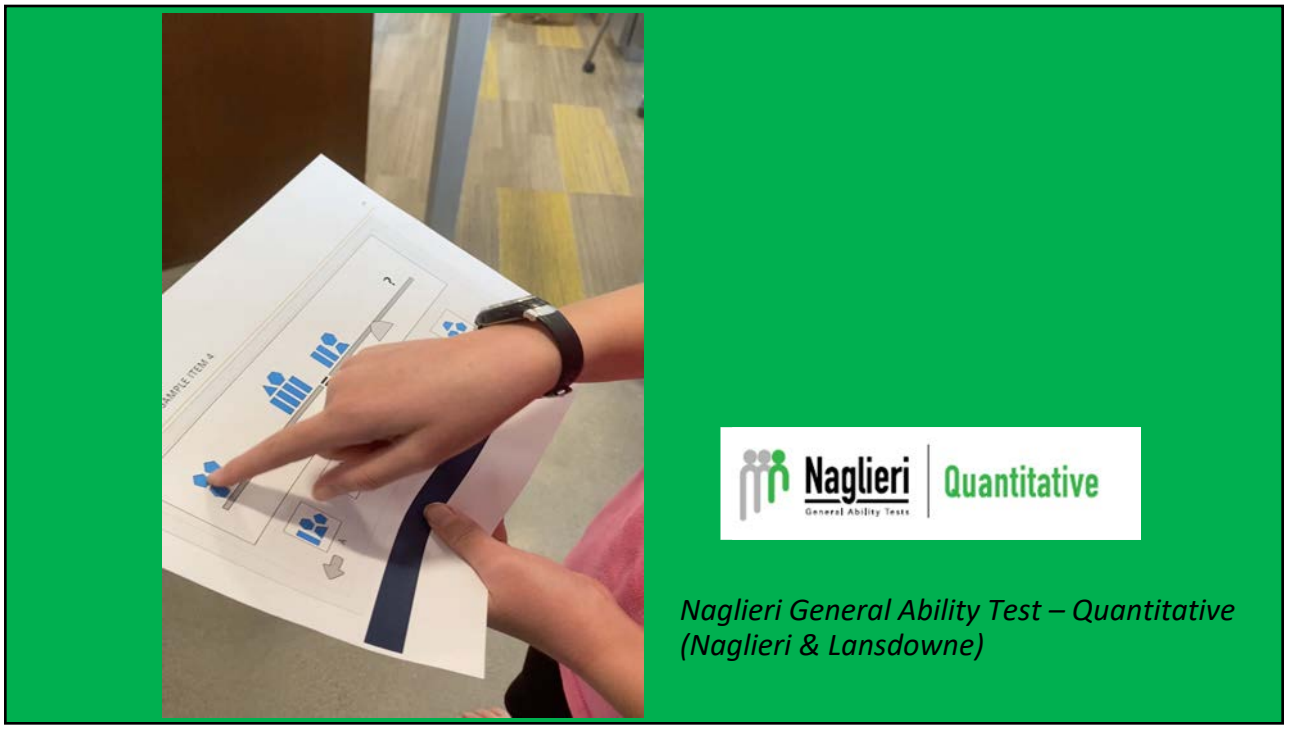
60


157
6 7 8 9 ?
12 10 13 9 11
A B C D E
229
?
A B C D E
140
3 6 11 18 27 ?
40 38 42 45 39
A B C D E

61


Naglieri
General Ability Tests
Quantitative
Naglieri General Ability Test – Quantitative
(Naglieri & Lansdowne)

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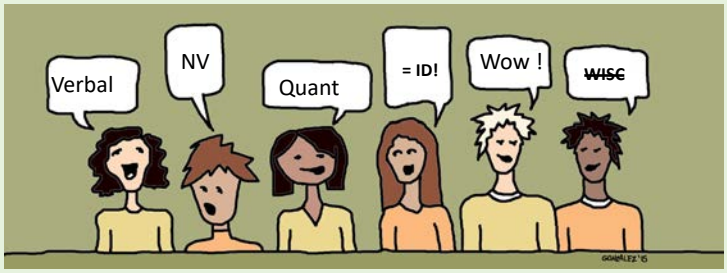
Core Group Discussion

- **What reactions do you have about this new way to identify gifted students?**



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Research Evidence of Equity

Selvamenan, M., Paolozza, A., Solomon, J., Naglieri, J. A., & Schmidt, M. T. (submitted for publication, Nov. 2020). Race, Ethnic, Gender, and Parental Education Level Differences on Verbal, Nonverbal, and Quantitative Naglieri General Ability Tests: Achieving Equity.

NONVERBAL TEST 	VERBAL TEST 	QUANTITATIVE TEST 
• N= 3,630 Sample closely matches the US population on key demographics • **No GENDER differences** found between **males** and **females** for raw score across all forms • **No RACE/ETHNICITY differences** among **White, Black, & Hispanic** for raw score across all forms • **No PARENTIAL EDUCATIONAL 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	• N= 2,482 Sample closely matches the US population on key demographics • **No GENDER differences** found between **males** and **females** for raw score across all forms • **No RACE/ETHNICITY differences** among **White, Black, & Hispanic** for raw score across all forms • **No PARENTIAL EDUCATIONAL 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	• N= 2,841 Sample closely matches the US population on key demographics • **No GENDER differences** found between **males** and **females** for raw score across all forms • **No RACE/ETHNICITY differences** among **White, Black, & Hispanic** for raw score across all forms • **No PARENTIAL EDUCATIONAL 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

64

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Summary of Reliability, Validity and Fairness

- The Naglieri–V items were subjected to a cultural review
- **Reliability coefficients** for the Verbal, Nonverbal and Quantitative tests were **high and exceed guidelines** for test reliability
- Confirmatory factor analysis of the three tests, independently and in combination supported a broad factor **of general ability**
- The Naglieri–NV correlated significantly **with the NNAT3**
- **Gifted students scored considerably higher** than students from the general population
- All test ITEMS were inspected for fairness by gender, race, ethnicity, parental education level (PEL), and primary language spoken using differential item functioning (DIF) and analyses of covariance; **negligible to small differences were found**
- Overall, initial findings suggest that the Naglieri General Ability Tests meet guidelines for reliability, validity, and fairness

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Comparison of English and Non-English Groups

- Total sample size = 322
- A matched sample was randomly drawn, pairing an English-speaking student with a Non-English-speaking student on the basis of gender, race, ethnicity, region, and age

Table 6.30. Demographic Characteristics of Matched English and Non-English Sample: Naglieri General Ability Tests

Demographic		English		Non-English		Total	
		N	%	*N*	%	*N*	%
Grade	Kindergarten	1	0.6	3	1.9	4	1.2
	Grade 1	25	15.5	7	4.3	32	9.9
	Grade 2	36	22.4	68	42.2	104	32.3
	Grade 3-4	55	34.2	41	25.5	96	29.8
	Grade 5-6	23	14.3	21	13.0	44	13.7
	Grade 7-9	21	13.0	21	13.0	42	13.0
Gender	Female	86	53.4	86	53.4	172	53.4
	Male	75	46.6	75	46.6	150	46.6
	Other	0	0.0	0	0.0	0	0.0
Racial/Ethnic Group	Asian	9	5.6	9	5.6	18	5.6
	Black	10	6.2	10	6.2	20	6.2
	Hispanic	85	52.8	85	52.8	170	52.8
	White	55	34.2	55	34.2	110	34.2
	Other	2	1.2	2	1.2	4	1.2
U.S. Region	Midwest	0	0.0	0	0.0	0	0.0
	South	149	92.5	149	92.5	298	92.5
	West	12	7.5	12	7.5	24	7.5
Age in years *M* (*SD*)		9.1 (2.2)		9.1 (2.2)		9.1 (2.2)	
Total		161	100.0	161	100.0	322	100.0

66

66

Group Differences by Primary Language Spoken

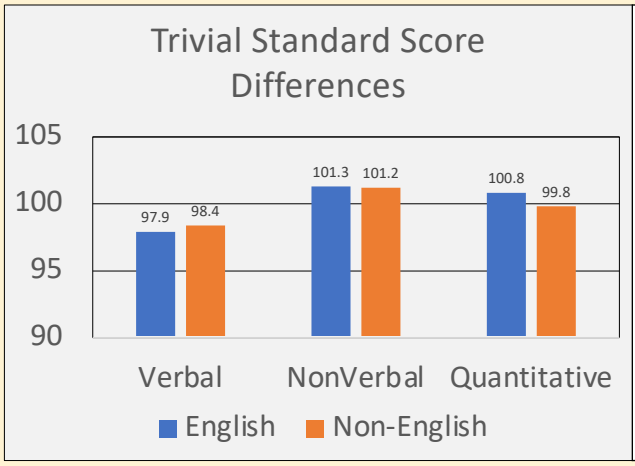

Table 6.31. Group Differences by Primary Language Spoken: Naglieri General Ability Tests

Test	Language Spoken	Descriptives		Differences		
		M	*SD*	Cohen's *d*	95% CI	*t*
Naglieri-V	English	97.9	14.5	-0.04	-0.07, 0.13	-0.32
	Non-English	98.4	14.8			
Naglieri-NV	English	101.3	14.1	0.00	-0.17, 0.02	0.04
	Non-English	101.2	13.5			
Naglieri-Q	English	100.8	14.1	0.07	-0.07, 0.13	0.65
	Non-English	99.8	12.9			

Note. $N = 161$ for each English and Non-English group. *t* statistic produced from a Welch Two Sample test. Cohen's |*d*|: small effect size = 0.20 to 0.49; medium effect size = 0.50 to 0.79; large effect size ≥ 0.80. Positive *d* values indicate higher scores for English Primary students. Naglieri–V = Naglieri General Ability Tests–Verbal; Naglieri–NV = Naglieri General Ability Tests–Nonverbal; Naglieri–Q = Naglieri General Ability Tests–Quantitative.

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Female (N = 3,000) Male (N = 2,999) Differences

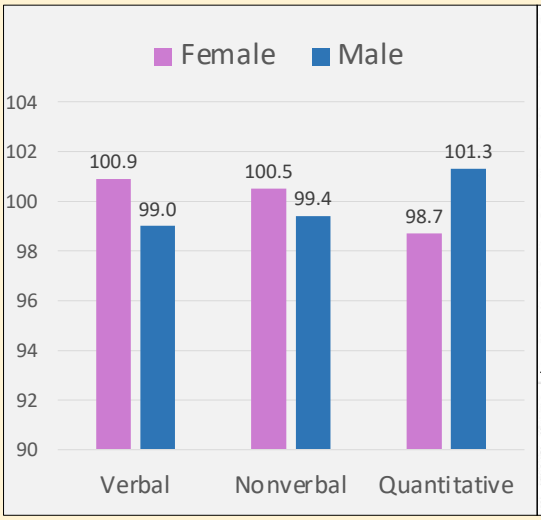

Table 7.9. Group Differences by Gender: Naglieri General Ability Tests

Test		Gender		Cohen's *d*
		Female	Male	
Naglieri–V	*M*	100.9	99.0	0.13
	SD	14.7	15.2	
Naglieri–NV	*M*	100.5	99.4	0.08
	SD	14.7	15.3	
Naglieri–Q	*M*	98.7	101.3	-0.17
	SD	14.4	15.4	
Total Score	*M*	100.1	99.9	0.01
	SD	14.7	15.3	

Note. Female $N = 3,000$ and Male $N = 2,999$. Guidelines for interpreting Cohen's |*d*|: small effect size = 0.20 to 0.49; medium effect size = 0.50 to 0.79; large effect size >= 0.80. Positive Cohen's *d* values imply higher scores for females. Naglieri–V = Naglieri General Ability Tests–Verbal; Naglieri–NV = Naglieri General Ability Tests–Nonverbal; Naglieri–Q = Naglieri General Ability Tests–Quantitative. Naglieri–V = Naglieri General Ability Tests–Verbal; Naglieri–NV = Naglieri General Ability Tests–Nonverbal; Naglieri–Q = Naglieri General Ability Tests–Quantitative; Total Score = Naglieri General Ability Tests–Total Standard Score.

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POST COVID National Norms

Grade-based National Norms 1,000 students pre grade (K to grade 5).

Table 1. National Norm Sample Characteristics.

Demographic		N	%	U.S. Census (%)	Difference (%)
Race/Ethnicity	Asian	235	3.9	4.7	-0.8
	Black	919	15.3	12.9	2.4
	Hispanic	1,261	21.0	23.3	-2.3
	White	2,914	48.6	46.1	2.5
	Other	671	11.2	12.9	-1.7
U.S. Region	Northeast	804	13.4	15.9	-2.5
	Midwest	1,270	21.2	20.2	1.0
	South	2,328	38.8	38.1	0.7
	West	1,598	26.6	25.7	0.9
Total National Norm Sample		6,000	100.0		

Note. U.S. population derived from the 2019 American Community Survey.[4]

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

- Even though the tests have different content (shapes, words, numbers) they all rely on **general ability ('g')**
- They all require understanding relationships among things or ideas

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Interpretive Considerations for 3 Test Scores

- The suite of Naglieri General Ability tests includes **three separate tests designed to measure "general ability**, or g"
- The three tests use questions that have different content- Verbal, Nonverbal and Quantitative and different authors.
- This provides MULTIPLE measures of general ability, 3 Total Scores and a Composite score (V, NV and Q).
- We examined how many students in the normative sample would be identified if various combinations of the three tests were given.
  - For example: "How many students had a standard score of 120 (91st percentile) on one, two or all three of these tests."

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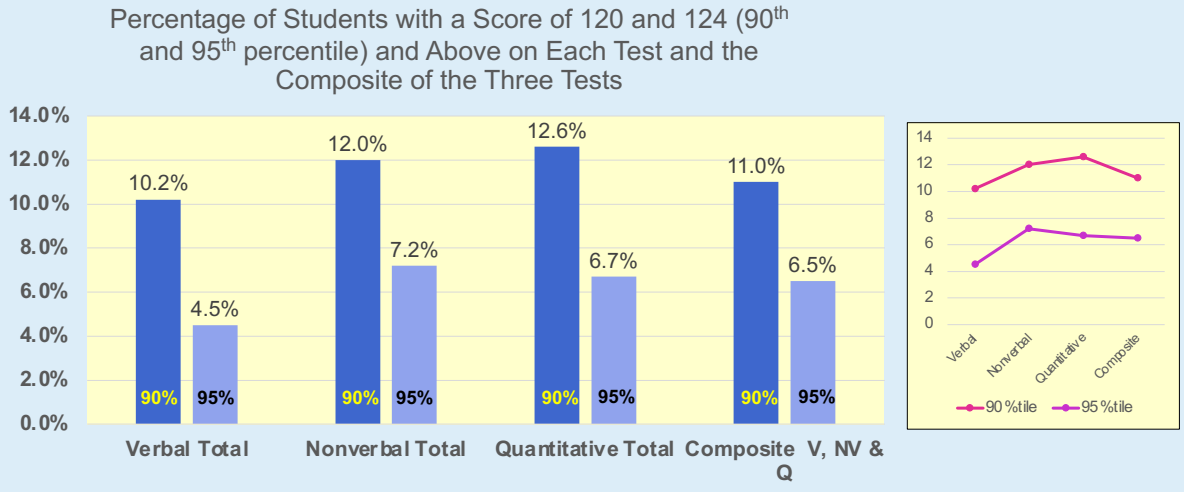
Number of Cases at 90 and 95th Percentile



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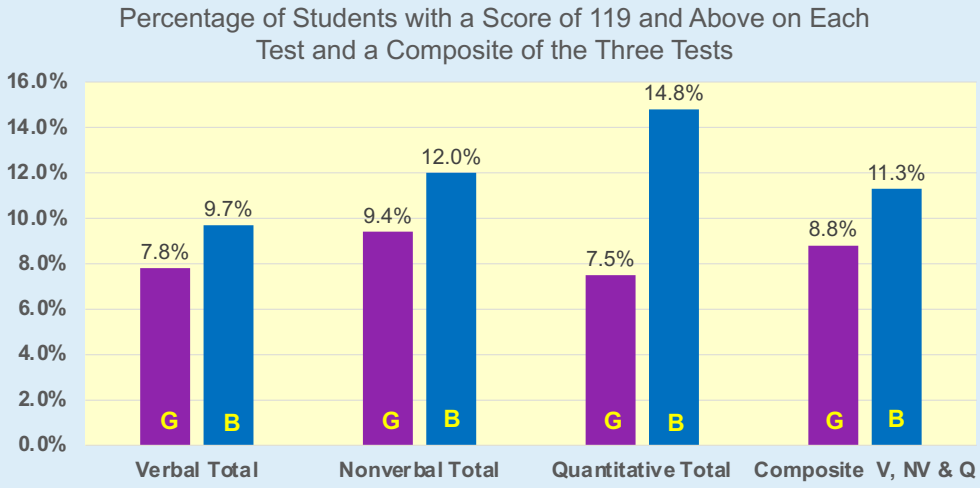
Number of Girls and Boys at 90th Percentile



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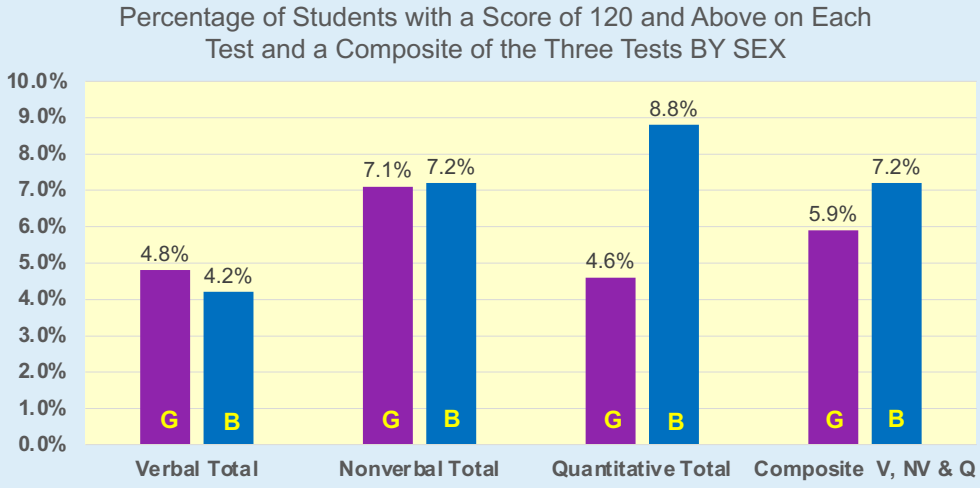
Number of Girls and Boys at 95th Percentile



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Summary: Equitable Assessment of Intelligence

- **Equitable evaluation of intelligence** demands test questions that can be solved regardless of the amount of academic knowledge and facility with language a student has
- We have shown that
  - General ability (*g*) **can be measured equitably** across Verbal, Quantitative and Nonverbal content if the tests do not require academic knowledge
- Verbal, Quantitative and Nonverbal are **a description of the content of the tests**' questions **NOT** different types of intelligence
- Equitable tests measure THINKING in a manner that is minimally influenced by KNOWING

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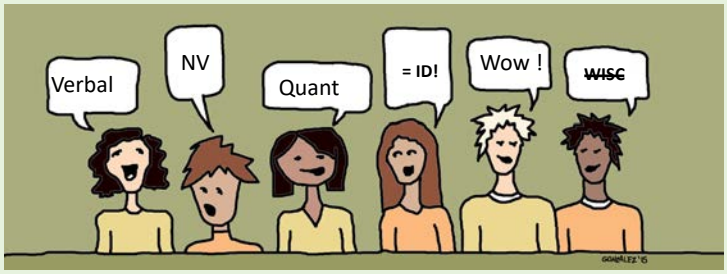
Core Group Discussion

- **Which sources of evidence was most important to you?**



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Time for final Thoughts, Questions and Answers

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We do the best we can with what we know, and when we know better, we do better.

— Maya Angelou —

Change Demands Courage to Think Differently

Socially just identification of gifted students requires self-reflection and self-correction in response to current research

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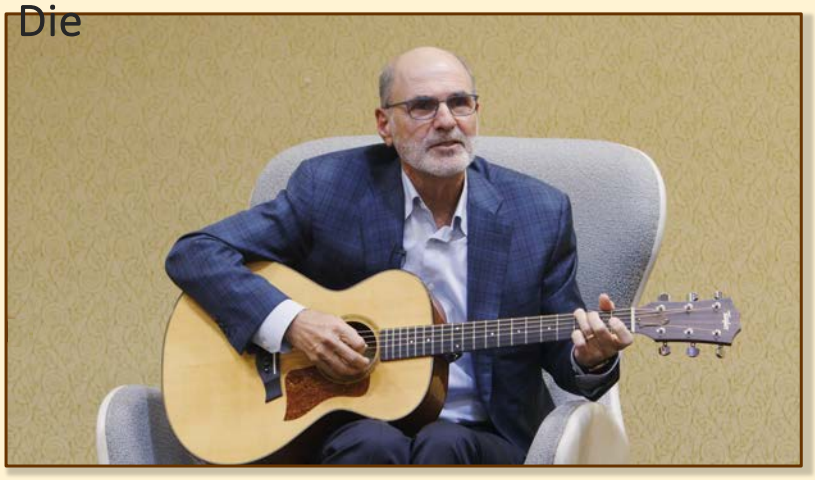
Maybe It's Time to Let the Old Ways Die



Thank You !

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