

Identify **All** Gifted Students: Measure Thinking not Knowing

Jack A. Naglieri, Ph.D.



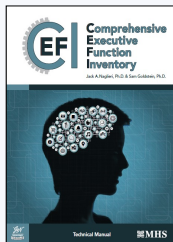
jnaglieri@gmail.com

NaglieriGiftedTests.com

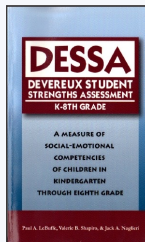
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Disclosures

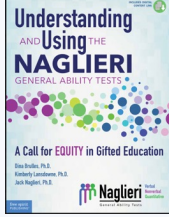
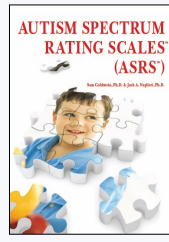
Executive Function



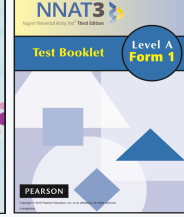
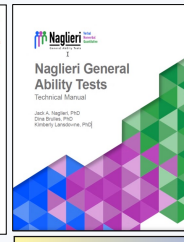
SEL & Impairment



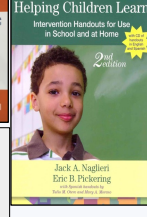
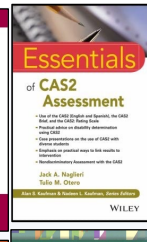
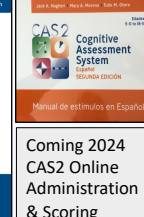
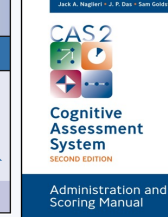
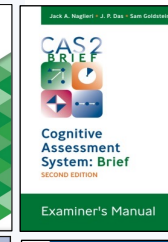
Autism



Gifted Identification



PASS Neurocognitive Theory: Assessment & Intervention Handouts



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FOR MORE INFORMATION PLEASE GO TO MY WEB PAGES



Verbal
Nonverbal
Quantitative

General Ability Tests

HOME AUTHORS ABOUT WEBINARS RECENT HANDOUTS FAQs MORE ▾

EQUITABLE ASSESSMENT OF GIFTED STUDENTS USING THE

Naglieri General Ability Tests

Now Available

WHY WE DO WHAT WE DO

Inequity in Gifted Testing

Recently researchers have estimated that more than 850,000 African-American, Hispanic, and Native American students in K-12 public school today could have been identified for gifted programs but were not. This problem could be addressed by using ability tests that were designed and validated to be equitable for all students.

Achieving Equity

The Naglieri General Ability Tests by Jack A. Naglieri, PhD, Dina M. Briles, PhD and Kimberly Landowne, PhD were explicitly developed to address the need for equitable assessment of gifted students from diverse cultural, linguistic, and socioeconomic backgrounds so they can receive educational opportunities appropriate for their ability.

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JACKNAGLIERI.COM

TOOLS FOR PSYCHOLOGICAL AND EDUCATIONAL ASSESSMENT

WELCOME TO JACKNAGLIERI.COM

This site was created to provide tools and resources for both psychologists and educators alike.

Jack A. Naglieri, PhD, has held faculty appointments at Northern Arizona University, The Ohio State University, and Georgia Mason University. He is currently a Research Professor at the University of Virginia, Senior Research Scientist at the Dornan Center for Resilient Children, and an Honorary Professor of Psychology at Georgia Mason University.

Dr. Naglieri has developed many tests used by psychologists and educators such as the Naglieri Nonverbal Ability Test, The Cognitive Assessment System, Academic Success Profile Scale, Dornan Student Strength Assessment, Comprehensive Executive Function Inventory, and the Naglieri General Ability Tests: Verbal, Nonverbal and Quantitative. He is widely known for his efforts to increase participation of traditionally under-represented students in gifted education. He is also well known for the PASS Theory of Intelligence and its application using the CAS for identification of specific learning disabilities using the Dyscalculia Consistency Method, for an equitable assessment of diverse populations, and academic interventions related to PASS non-acceptance processes.

NAGLIERI GENERAL ABILITY TESTS: VERBAL, NONVERBAL AND QUANTITATIVE

The Naglieri General Ability Tests: Verbal, Nonverbal and Quantitative provide equitable assessment of students for gifted educational programs.

HANDOUTS

Download PDF handouts of past presentations and related research on the following tests and topics

WEBINARS

A webinar library that covers a variety of topics such as EF, Autism Assessment, and SLD. We have created this library to share and learn from each other while staying home and safe.

EQUITY

xx this section provides information about equity in the CAS and equity in gifted assessment. CHAT

EXECUTIVE FUNCTION

xxx Comprehensive examination of executive function, its measurement, and intervention.

HELPING CHILDREN LEARN

Helping Children Learn was written to give parents and teachers simple ways to make learning fun and easy for any child. Handouts

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Ideas to Consider

My equity journey

New tests of General Ability

What is General Ability

Identification of gifted students

Local and National Norms

Twice Exceptional gifted students with

- SLD
- ADHD
- ASD

PASS validity, profiles and interpretation

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WHY do I do this work?

- When I started working as a school psychologist in 1975...I noticed that parts of the intelligence tests we used were VERY similar to parts of the achievement tests
 - For example, the Achievement Test had a General Information and Arithmetic subtests JUST LIKE THE WISC!
- THAT DID NOT MAKE SENSE



1975 Charles Champagne Elementary, Bethpage, NY

It seemed wrong to measure **intelligence** using questions that demand **knowledge**

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- Was it reasonable to measure 'intelligence' with questions that required knowledge?
- Testing in Havasupai answered that question



6

6

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		

WISC-R RECORD FORM

Wechsler Intelligence Scale for Children-Revised

NAME: _____ ADDRESS: _____ PARENT'S NAME: _____ SCHOOL: _____ PLACE OF TEST: _____ REFERRED BY: _____

Year: 81 Month: 9 Day: 19
Date Tested: 7/1/81
Date of Birth: 7/4/18
Age: 7 4 18

WISC-R PROFILE

Children who wish to draw a profile should first transfer the child's scaled scores to the row of boxes below. Then mark an X on the dot corresponding to the scaled score for each test, and draw a line connecting the X's.

VERBAL TESTS				PERFORMANCE TESTS			
Information	Similarities	Arithmetic	Comprehension	Digit Span	Block Design	Picture Arrangement	Object Assembly
19	19	19	19	19	19	19	19
18	18	18	18	18	18	18	18
17	17	17	17	17	17	17	17
16	16	16	16	16	16	16	16
15	15	15	15	15	15	15	15
14	14	14	14	14	14	14	14
13	13	13	13	13	13	13	13
12	12	12	12	12	12	12	12
11	11	11	11	11	11	11	11
10	10	10	10	10	10	10	10
9	9	9	9	9	9	9	9
8	8	8	8	8	8	8	8
7	7	7	7	7	7	7	7
6	6	6	6	6	6	6	6
5	5	5	5	5	5	5	5
4	4	4	4	4	4	4	4
3	3	3	3	3	3	3	3
2	2	2	2	2	2	2	2
1	1	1	1	1	1	1	1

NOTES: $\bar{x} = 9.4$

VERBAL TESTS	Raw Score	Scaled Score
Information	3	3
Similarities	0	2
Arithmetic	4	4
Vocabulary	0	1
Comprehension	2	2
(Digit Span)	12	12
Verbal Score		

PERFORMANCE TESTS	Raw Score	Scaled Score
Picture Completion	10	8
Picture Arrangement	5	5
Block Design	18	12
Object Assembly	17	11
Coding	17	11
(Mazes)	11	11
Performance Score		

Verbal Score	Performance Score	Full Scale Score	IQ
52	95	73	73

*Based from 4 tests, if necessary.

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

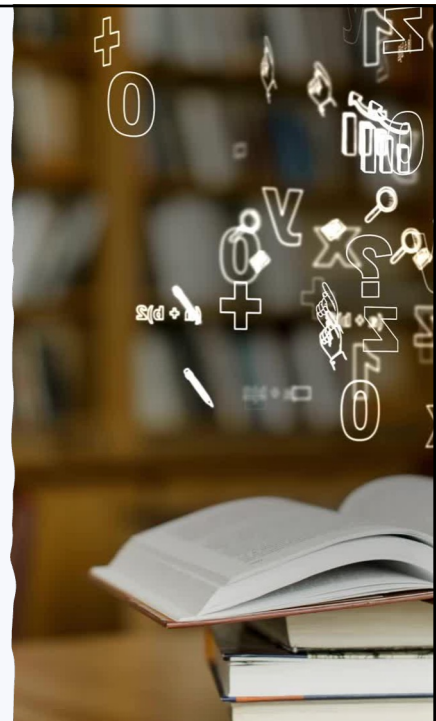
Naglieri, J. A., & Yazzie, C. (1983). Comparison of the WISC-R and PPVT-R with Navajo children. *Journal of Clinical Psychology*, 39, 598-600.

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I realized that we should measure intelligence in a way that was not dependent on knowledge.

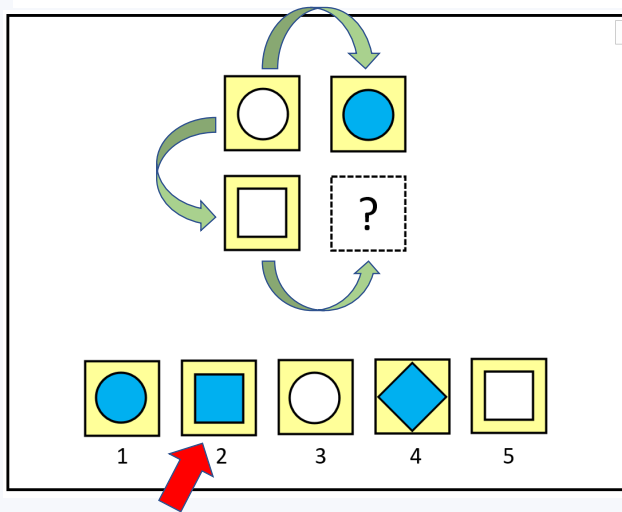
How to achieve this goal?

My career as a test developer began with this goal



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Tests that Measure Thinking or Knowing?



Girl is woman as
boy is to man ?

3 is to 9 as
5 is to 25 ?

C⁷ is to F as
E⁷ is to A ?

9

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Ideas to Consider

My equity journey

New tests of General Ability

What is General Ability

Identification of gifted students

Local and National Norms

Twice Exceptional gifted students with

- SLD
- ADHD
- ASD

PASS validity, profiles and interpretation

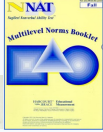
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Naglieri's Nonverbal Tests : 1985 to Present

• **Seventh** Version of the Naglieri Nonverbal Tests



MAT
Short & Expanded
Forms
1985



Naglieri
Nonverbal
Ability Test
1997



NNAT –
Individual,
2003



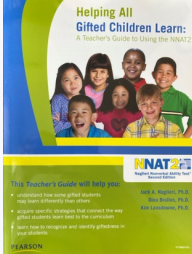
NNAT -2
2008



NNAT3
2016



Naglieri
General Ability Tests
Verbal
Nonverbal
Quantitative

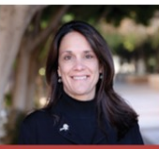


Helping All
Gifted Children Learn:
A Teacher's Guide to Using the NNAT2

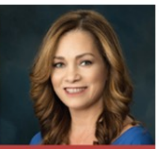
Naglieri General Ability Tests: Verbal, Nonverbal and Quantitative (2021) were developed to measure *general ability* using three different kinds of test content: Verbal, Nonverbal and Quantitative.



Dr. Jack A. Naglieri
(University of Virginia)



Dr. Kimberly Lansdowne
(Arizona State University)



Dr. Dina Brulles
(Paradise Valley USD)

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Our View of Gifted Students

- Gifted = very smart
- Talented = very accomplished
- **Find gifted students** by using an **intelligence test** that **does not** include *knowledge*
- **Find talented students** by using an **achievement test**
- *Universal testing ensures that all students have an opportunity*



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

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

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Kim Lansdowne, Ph.D. Kimberly.Lansdowne@asu.edu



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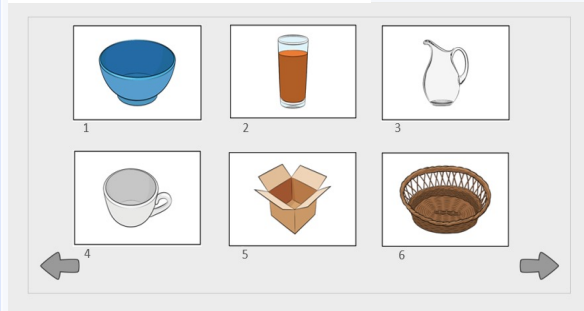
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Naglieri General Ability Test – Verbal (Naglieri & Brulles)

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*.



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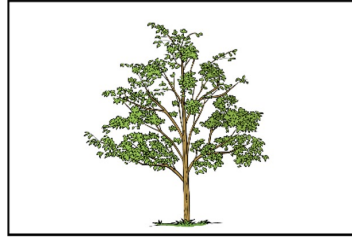
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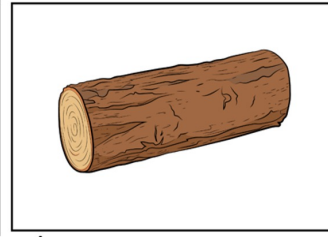
Verbal

1st Gr. Easy

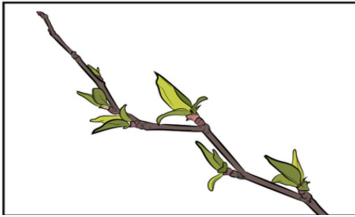
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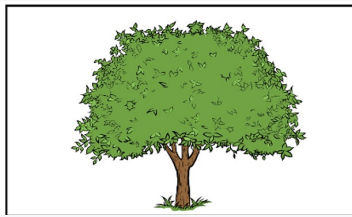
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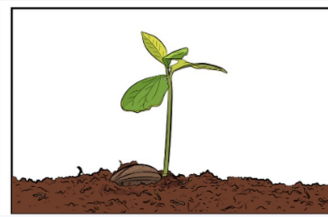
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5



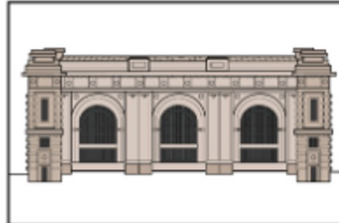
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 Naglieri
General Ability Tests | Verbal

17

6th Gr. Hard – discuss each option

1



2



3



4



5



6

 Naglieri
General Ability Tests | Verbal

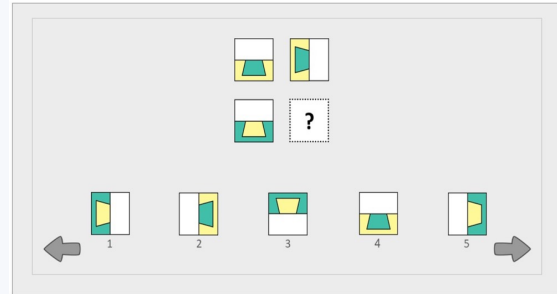
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Naglieri General Ability Test - Nonverbal

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

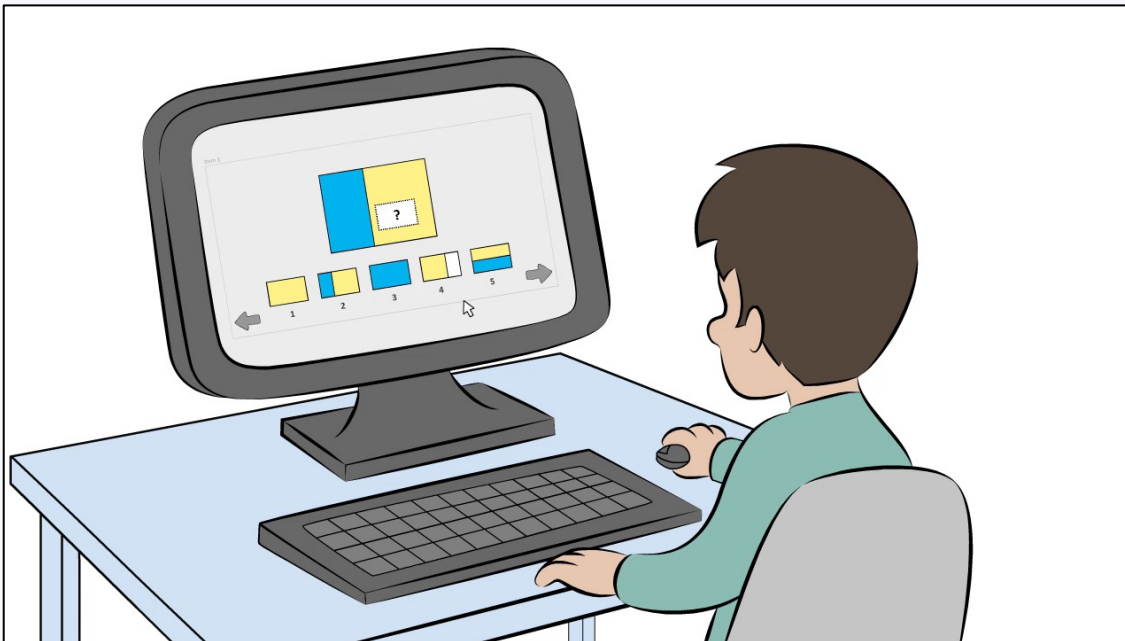
The structure of the items varies, but all items require that the student decipher the logic behind *the relationships among the shapes*, sequences, spatial orientations, patterns, and other distinguishing characteristics.

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



19

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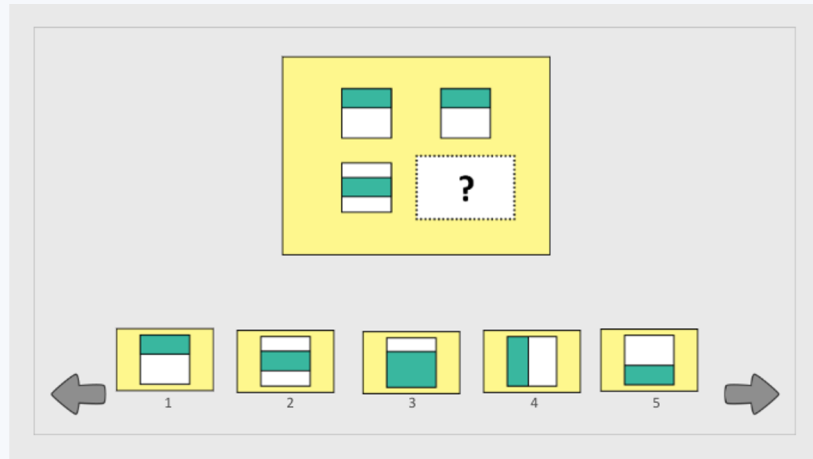


20

20

6th Gr.

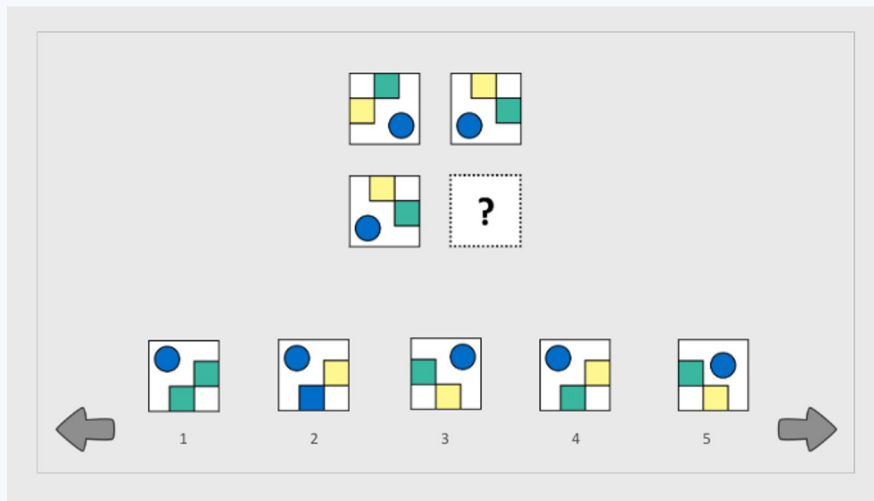
Easy


 **Naglieri**
General Ability Tests | **Nonverbal**

21

6th Gr.

Hard


 **Naglieri**
General Ability Tests | **Nonverbal**

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Naglieri General Ability Test – Quantitative (Naglieri & Lansdowne)

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.



23

23



24

24

Naglieri General Ability Tests-Grade 1-Easy

157

6	7	8	9	?
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12

A

10

B

13

C

9

D

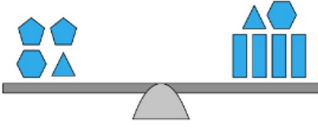
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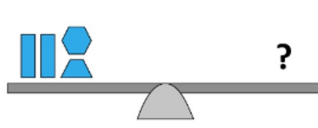
E

25

Naglieri General Ability Tests-Grade 1-Hard

229







A



B



C



D



E

26





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

***She solved the item by
THINKING***

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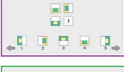
About the Tests

The verbal, nonverbal, and quantitative content on each of the Naglieri General Ability Tests™ gives students multiple opportunities to show their ability. The tests were developed to allow students to answer the questions using any language.

The Naglieri General Ability Tests-Verbal uses pictures that represent verbal concepts. The student needs to figure out what verbal concept is shared by five of the pictures to select which picture does not represent the concept.



The Naglieri General Ability Tests-Nonverbal uses questions that are presented using shapes and diagrams. The student needs to find the relationships among shapes, their color and other features to figure out which answer completes the pattern.



The Naglieri General Ability Tests-Quantitative uses numbers and shapes that are arranged in a pattern. The student needs to identify patterns and sequences of basic math concepts.



Score Type	Description
National Percentile Rank	A score that compares a student to a national sample of students in the same grade using scores that range from 1st (low) to 99th (high). For example, a 90th percentile rank would mean that the student earned a score that was equal to or greater than 90% of students in the national sample.
National Stanine	A score that compares a student to a national sample of students in the same grade using scores that range from 1 (low) to 9 (high).
National Standard Score	A score that compares a student to a national sample of students in the same grade using scores that range from 55 (low) to 145 (high).
Total Score	A score that compares a student to a national sample of students in the same grade based on any combination of the tests.

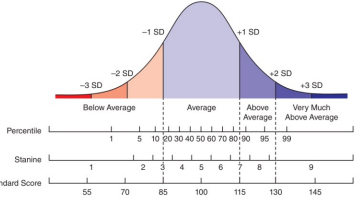
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Student Name: John Tigerwood
Student ID: 123456
Grade: 3
School: Manhattan Public School
School District: Dovercourt Public District School Board



Individual Report

John recently took the Naglieri General Ability Tests™. The tests measure general ability using verbal, nonverbal, and quantitative questions that were created to provide students an equal opportunity to show their ability. The Naglieri General Ability Tests compare each student to their peers. The figure below shows how most students in the sample score. Scores that are within the "Average" category (middle of the graph) occur most often. Scores above or below this range occur less often. Above Average scores indicate high general ability. The score profile is found in the table below. Note that if only one test was administered, a Total Score cannot be calculated.



Note. SD= Standard Deviation.

Test	Date Tested (YYYY-MM-DD)	National Percentile Rank	National Stanine	National Standard Score
Naglieri-Verbal	2024-01-01	85th	7	118
Naglieri-Nonverbal	2024-01-10	90th	8	121
Naglieri-Quantitative	2024-01-03	92nd	8	126
Total Score		91st	8	122

For more information
on the Naglieri General Ability Tests™, scan the QR code or view:
URL:

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Research Evidence of Equity

Selvamenan, M., Paolozza, A., Solomon, J., Naglieri, J. A., & Schmidt, M. T. (Psychology in the Schools, 2004). Race, Ethnic, Gender, and Parental Education Level Differences on Verbal, Nonverbal, and Quantitative Naglieri General Ability Tests: Achieving Equity.

Received 28 November 2023 | Revised 21 March 2024 | Accepted 28 August 2024
DOI: 10.1002/pys.2309

RESEARCH ARTICLE

A pilot study of race, ethnic, gender, and parental education level differences on the Naglieri General Ability Tests: Verbal, Nonverbal, and Quantitative

Mathangi Selvamenan PhD¹ | Angelina Paolozza PhD¹ | Joanna Solomon MSc² | Jack A. Naglieri PhD³

¹North Health Systems, Toronto, Ontario, Canada
²George Mason University, Fairfax, Virginia, USA
³University of Illinois at Chicago, Chicago, Illinois, USA

Abstract
This study was conducted to examine the relationships between general intelligence test scores and race, ethnicity, gender, and parental education using the Naglieri General Ability Tests: Verbal, Nonverbal and Quantitative (Naglieri & Briles, 2021). For three samples that closely match the US population, few differences were found on the preliminary versions of the Verbal (Naglieri & Briles, 2021; N = 2,482), Quantitative (Naglieri & Landis, 2021; N = 2,841), and Nonverbal (Naglieri, 2021; N = 3,630) Naglieri General Ability Tests. These initial findings suggest that this approach to measuring general ability may ultimately have utility for equitable identification of students from diverse backgrounds for possible inclusion in gifted educational programs.

KEYWORDS
equitable assessment, gifted, intelligence tests, Naglieri General Ability Tests, verbal, nonverbal, quantitative, racial differences

Practitioner points
• **Minimized Performance Differences:** The study found that by addressing language and academic knowledge demands in test content and instruction on the Naglieri General Ability Tests (Verbal, Quantitative, and Nonverbal),

NONVERBAL 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

VERBAL TEST



- 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

QUANTITATIVE TEST



- 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

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Group Differences by Primary Language Spoken

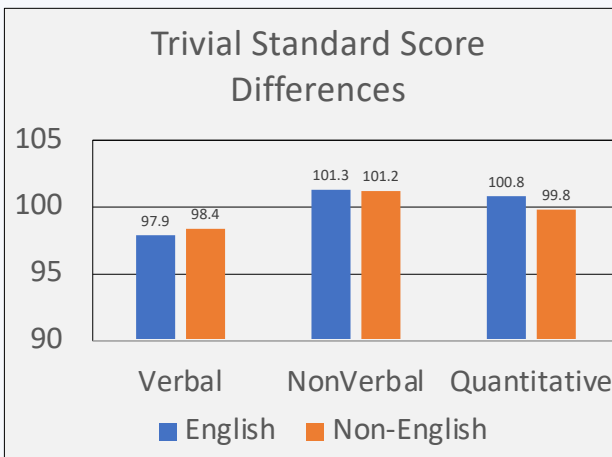


Table 6.31. Group Differences by Primary Language Spoken: Naglieri General Ability Tests

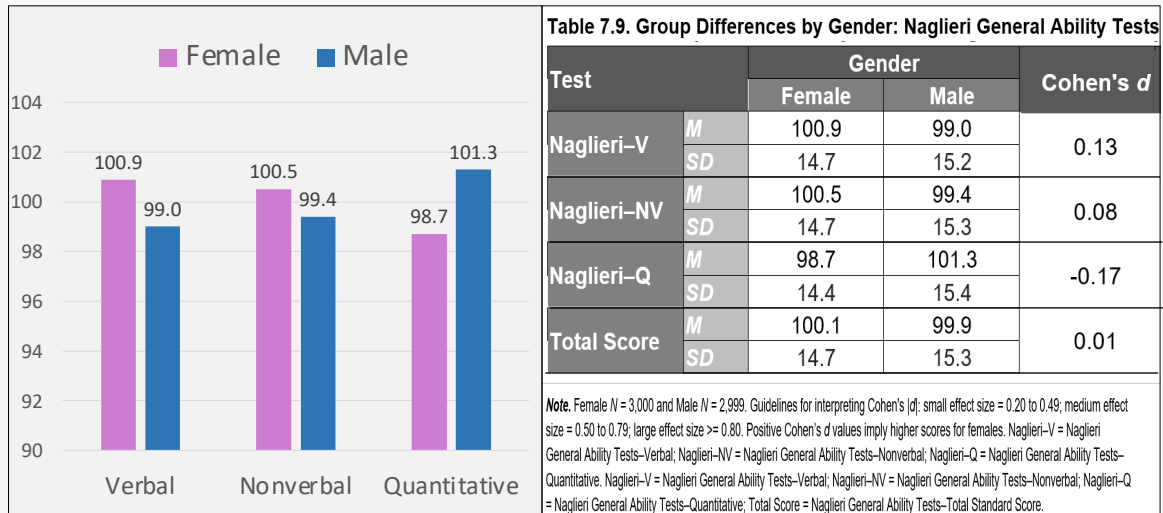
Test	Language Spoken	Descriptives		Differences		
		M	SD	Cohen's d	95% CI	t
Naglieri-V	English	97.9	14.5	-0.04	-0.07, 0.13	-0.32
	Non-English	98.4	14.8			
Naglieri-NV	English	101.3	14.1	0.00	-0.17, 0.02	0.04
	Non-English	101.2	13.5			
Naglieri-Q	English	100.8	14.1	0.07	-0.07, 0.13	0.65
	Non-English	99.8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



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Urban and Suburban Childrens' Performance on the Naglieri Verbal, Nonverbal and Quantitative General Ability Tests

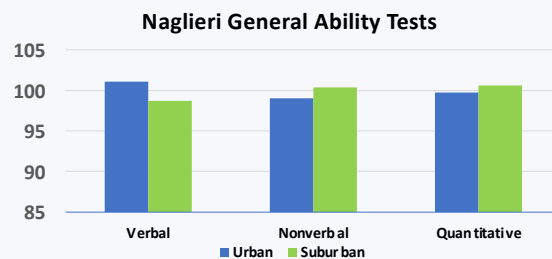
Naglieri, Farmus & Brulles (submitted for publication, July 2025)

Abstract

The purpose of this study was to examine general intelligence test scores among children in urban and suburban settings using the Naglieri General Ability Tests: Verbal, Nonverbal, and Quantitative (Naglieri, Brulles, & Lansdowne, 2021). The two samples included children aged 4–17 years who were closely matched to the U.S. population based on gender, race, ethnicity, geographic region, and parental education level. Few differences were found on preliminary versions of the Naglieri General Ability Tests—Verbal (Naglieri & Brulles, 2021; *N* = 2,078), Nonverbal (Naglieri, 2021; *N* = 1,665), and Quantitative (Naglieri & Lansdowne, 2021; *N* = 1,974). These findings suggest that this approach to measuring general ability may have utility for more equitable identification of students from diverse backgrounds for possible inclusion in gifted education programs.

Table 2
Comparison of Urban vs Suburban Mean Scores Across Verbal, Nonverbal, and Quantitative Test

	<i>N</i>	Urban <i>M</i> (SD)	Suburban <i>M</i> (SD)	<i>M</i> Diff (95% CI)
Verbal	2078	101.07 (14.96)	98.71 (14.83)	2.36 (1.06, 3.66)
Nonverbal	1665	99.02 (13.73)	100.38 (15.46)	-1.36 (-2.91, 0.17)
Quantitative	1974	99.71 (14.69)	100.61 (15.04)	-0.90 (-2.25, 0.46)



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POST COVID National Norms AND Local 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		

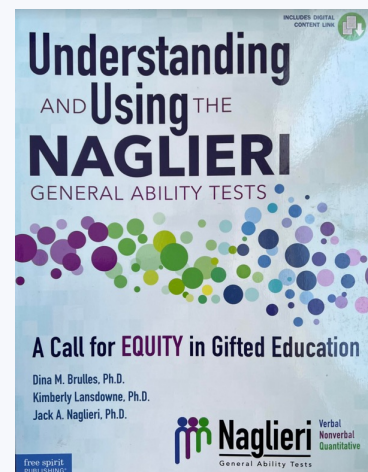
Note. U.S. population derived from the 2019 American Community Survey.⁴

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Serving All Gifted Learners

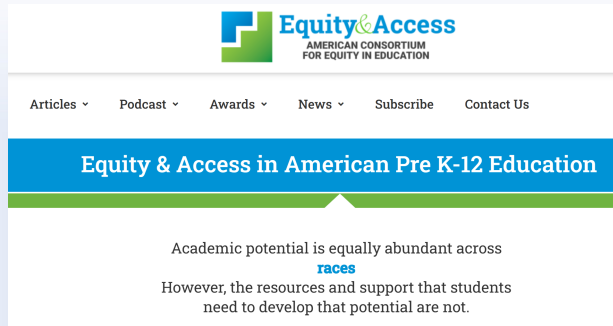
- Following identification, how can we create more equitable and inclusive gifted programs and services?
- Schools must expand their views, procedures and practices on programs for gifted learners such as:
 - Cluster Grouping
 - Honors Classes
 - Enrichment Classes
 - Self-contained Programs
- See our book for details!



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American Consortium for Equity in Education 2024 Awards



<https://www.ace-ed.org/>

Diversity and Inclusion Solution – PreK-12

Naglieri General Ability Tests



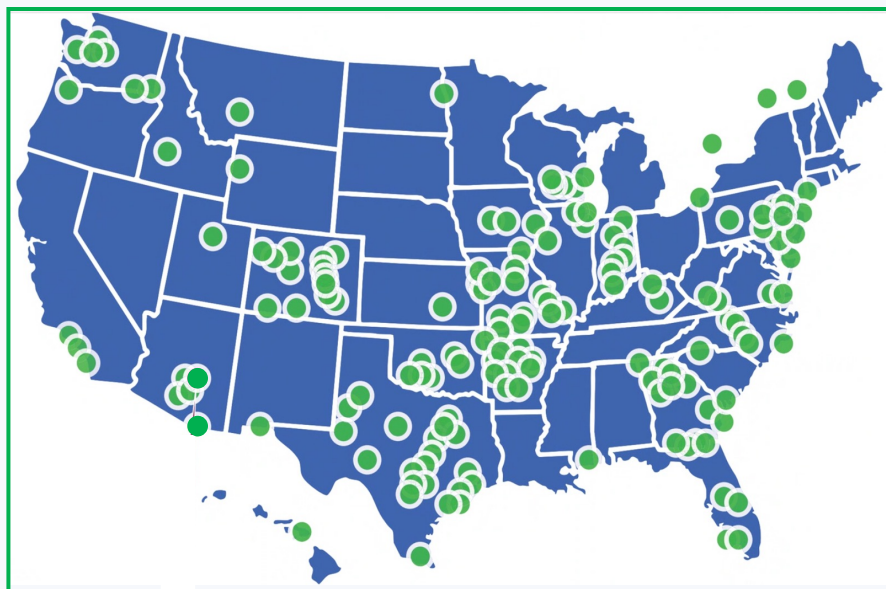
Author, Speaker, or Consultant of the Year

Dr. Jack Naglieri, Dr. Dina Brulles, and Dr. Kimberly Lansdowne



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Naglieri General Ability Tests: Verbal, Nonverbal & Quantitative use after one year



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Time for Thoughts, Questions and Answers

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Ideas to Consider



My equity journey

New tests of General Ability

What is General Ability

Identification of gifted students

Local and National Norms

Twice Exceptional gifted students with

- SLD
- ADHD
- ASD

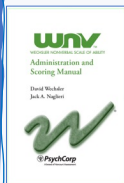
PASS validity, profiles and interpretation

38

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)

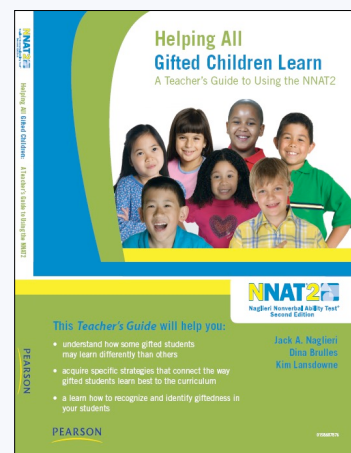
“The aggregate or global capacity of the individual to act purposefully, to think rationally, and to deal effectively with his environment (1939)”



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General ability (Naglieri, Brulles & Lansdowne, 2009)

- General ability is what allows us to solve many different kinds of problems which 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.
- The key is to measure general ability in a way that is not confounded by knowledge



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Ideas to Consider

My equity journey

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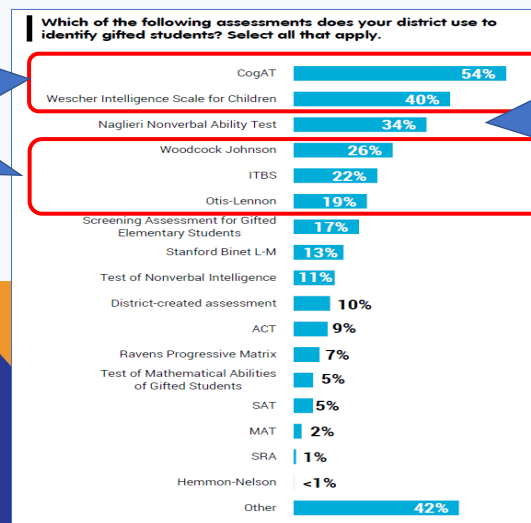
- SLD
- ADHD
- ASD

PASS validity, profiles and interpretation

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National Survey of Gifted Education

These tests have verbal and quantitative questions and lengthy verbal directions



The NNAT is the only test that measures thinking in a way that is not confounded by knowing.

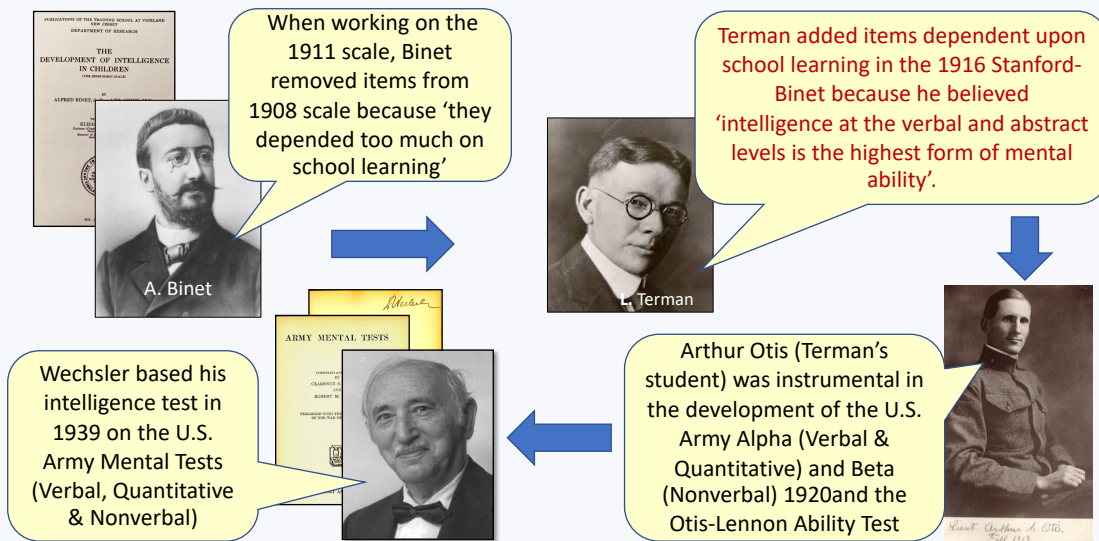
EdWeek
Research Center

Gifted Education
Results of a National Survey

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



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Knowledge is Included in "Ability" Tests

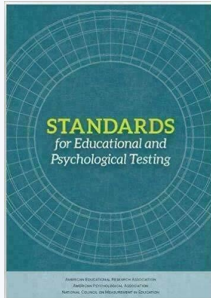
Stanford-Binet-5	WISC-V	WJ-IV	KABC-II	OLSAT	CogAT
• Verbal • Knowledge • Quantitative Reasoning • Vocabulary • Verbal Analogies	• Verbal Comprehension Vocabulary, Similarities, Information & Comprehension • Fluid Reasoning Figure Weights, Arithmetic	• Comprehension Knowledge: Vocabulary & General Information • 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

44

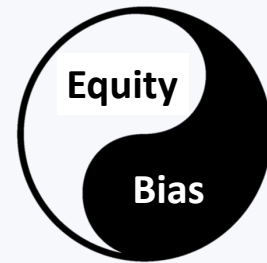
44

Differences in Mean Scores = Impact

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 knowing the answers) **even if the norming data do not demonstrate test bias.**



45

45

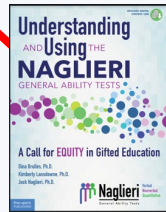
	Race	Ethnic
Tests that require knowledge	8.5	4.8
Otis-Lennon School Ability Test (one school district)	13.6	-
CogAT7 Nonverbal (one school district)	11.8	7.6
CogAT-Total (V, Q & NV)	7.0	4.5
CogAT7 - Verbal	6.6	5.3
CogAT- Nonverbal	6.4	2.9
CogAT7-Quantitative	5.6	3.6
Tests that require minimal knowledge	3.8	1.7
Naglieri General Ability Test-Verbal (normative sample)	6.2	1.0
Naglieri General Ability Test-Quantitative (normative sample)	5.5	4.4
Naglieri General Ability Test-Nonverbal (normative sample)	4.4	0.3
NNAT (matched samples)	4.2	2.8
NNAT (matched samples English Spanish)	-	1.3
Naglieri General Ability Test-Quantitative (matched to US)	3.2	1.3
Naglieri General Ability Test-Verbal (matched to US)	2.2	1.6
Naglieri General Ability Test-Nonverbal (matched to US)	1.0	1.1

Race and Ethnic
Differences on
Group
Administered
Ability Tests

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Traditional and Second-Generation Intelligence Tests' Race and Ethnic Differences



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); **KABC-II** by Lichtenberger, Volker, Kaufman & Kaufman, (2006) and Scheiber and Kaufman (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), and **Naglieri General Ability Tests** by Naglieri, Brulles, and Lansdowne (2022 & 2024).

Tests that require knowledge	Race Mn = 9.2	Ethnicity Mn = 6.8
Otis-Lennon School Ability Test (one school district)	13.6	-
Stanford-Binet IV (normative sample)	12.6	-
CogAT7 Nonverbal (one school district)	11.8	7.6
WISC-V (normative sample)	11.6	9.1
WJ- III (normative sample)	10.9	10.7
KABC-11 Nonverbal Index	10.0	7.0
KABC II Fluid-Crystallized Index	9.3	10.5
WISC-V (normative sample adjusted for sex and parental ed)	8.7	3.7
KABC-II (MPI conorming sample)	8.1	8.2
K-ABC II MPI (normative sample)	7.9	5.9
KABC II MPI (normative sample adjusted for sex and parental ed)	7.9	8.9
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
Tests that require minimal knowledge	Mn = 4.0	Mn = 2.3
CAS-2 (normative sample)	6.3	4.5
Naglieri General Ability Test-Verbal (normative sample)	6.2	1.0
Naglieri General Ability Test-Quantitative (normative sample)	5.5	4.4
CAS (statistical controls for normative sample)	4.8	4.8
CAS-2 (statistical controls for normative sample)	4.5	1.8
Naglieri General Ability Test-Nonverbal (normative sample)	4.4	0.3
NNAT (matched samples)	4.2	2.8
NNAT (matched samples English Spanish)	-	1.3
Naglieri General Ability Test-Quantitative (matched to US)	3.2	1.3
Naglieri General Ability Test-Verbal (matched to US)	2.2	1.6
CAS-2 Brief (normative sample)	2.0	2.8
Naglieri General Ability Test-Nonverbal (matched to US)	1.0	1.1

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What is the Practical Impact?

Services can be provided for those who otherwise would not have been identified

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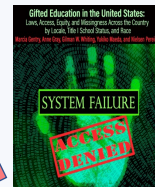
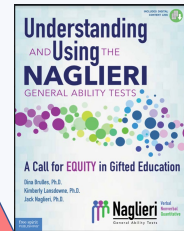
48

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: $N \text{ in Gifted Education} / \text{Potential } N \text{ in Gifted Education}$.
 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/ipeds/data/ipeds-tables/ipeds2027-tables/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/ipeds/data/ipeds-tables/ipeds2014-tables/204.80.asp>
 4. From: Brulles, D., Landsdowne, 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

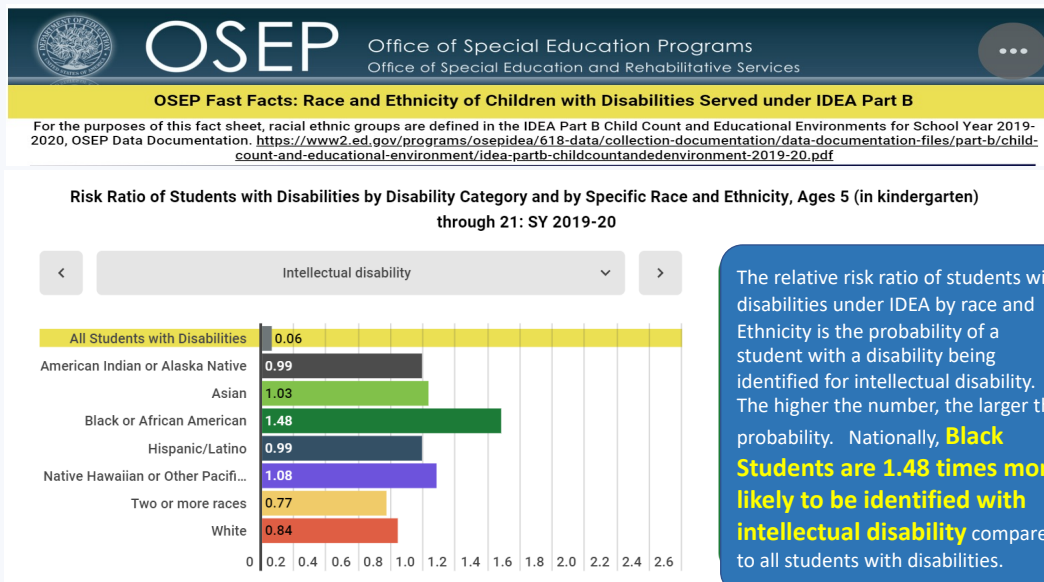


895,200

371,508

49

49



<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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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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Ideas to Consider

My equity journey

New tests of General Ability

What is General Ability

Identification of gifted students

Local and National Norms

Twice Exceptional gifted students with

- SLD
- ADHD
- ASD

PASS validity, profiles and interpretation

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Naglieri General Ability Tests International Use

- Use a Local Norming Procedure
- Obtain scores for **ALL** students (not only referred students) in the grades for which the GT decisions is needed
- Decide how the information obtained for each student is to be evaluated (i.e., average, and or logic) and if it is to be weighted
- Evaluate the outcome vis-à-vis equity



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Ideas to Consider

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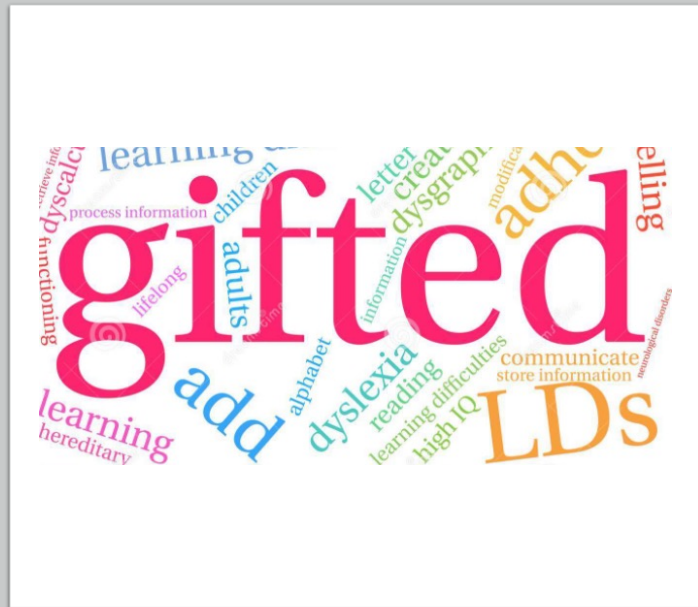
PASS validity, profiles and interpretation

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Welcome

Twice exceptional gifted students..

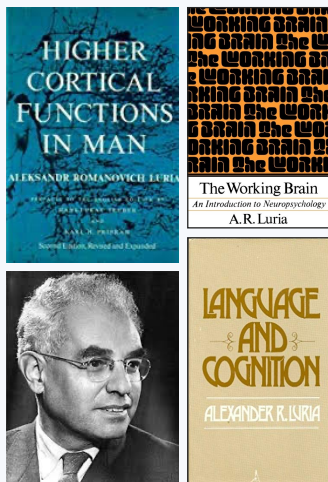
- DSMV for Attention Deficit Disorder and Autism Spectrum disorder
- IDEA for Specific Learning Disabilities.
- These are NEURODIVERSE populations so use PASS scores from the CAS2



55

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Luria's Explanation of Brain Function



- **P**lanning = DECIDING HOW TO DO WHAT YOU DECIDE TO DO
- **A**ttention = BEING ALERT AND RESISTING DISTRACTIONS
- **S**imultaneous = GETTING THE BIG PICTURE
- **S**uccessive = FOLLOWING A SEQUENCE

PASS theory can be used to define **NEURODIVERSITY**

These are easy to understand definitions of basic psychological processes that are measured with the Cognitive Assessment System – Second Edition

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PASS Theory and CAS2 Information



PASS Theory of Intelligence and the CAS2

JACK A. NAGLIERI & TULIO M. OTERO



Download Free E-Book

The goal of this e-book is to describe the context in which the PASS Theory of Intelligence was conceived and explain why it guided the construction of the Cognitive Assessment System and its various versions, and the second edition.

Free CAS2 Access for Univ Professors



Neurodiversity Podcast



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PASS Theory: Four Ways of Thinking

Planning

A	B	C	D
X	O	O	X

A	B	C	D	A
X	O	O	X	
A	B	C	D	A
X	O			
A	B	C	D	A
X	O			
A	B	C	D	A
X	O			

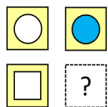
Use a PLAN

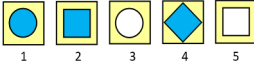
Attention

BLUE	RED
RED	RED
YELLOW	YELLOW
BLUE	BLUE
YELLOW	RED

Focus & Resist Distraction

Simultaneous





1 2 3 4 5

See the Patterns

Successive

4	3	8	6	1
---	---	---	---	---

Follow the sequence

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Ideas to Consider

My equity journey

New tests of General Ability

What is General Ability

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Local and National Norms

Twice Exceptional gifted students with

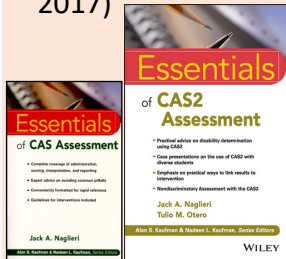
- SLD
- ADHD
- ASD

PASS validity, profiles and interpretation

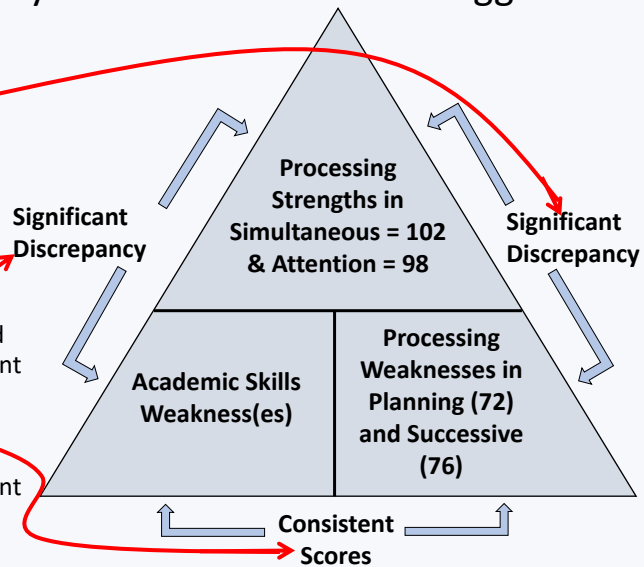
59

Answering the Question: Why students succeed & struggle

- The Discrepancy Consistency Method (DCM) was first introduced in 1999 (most recently in 2017)

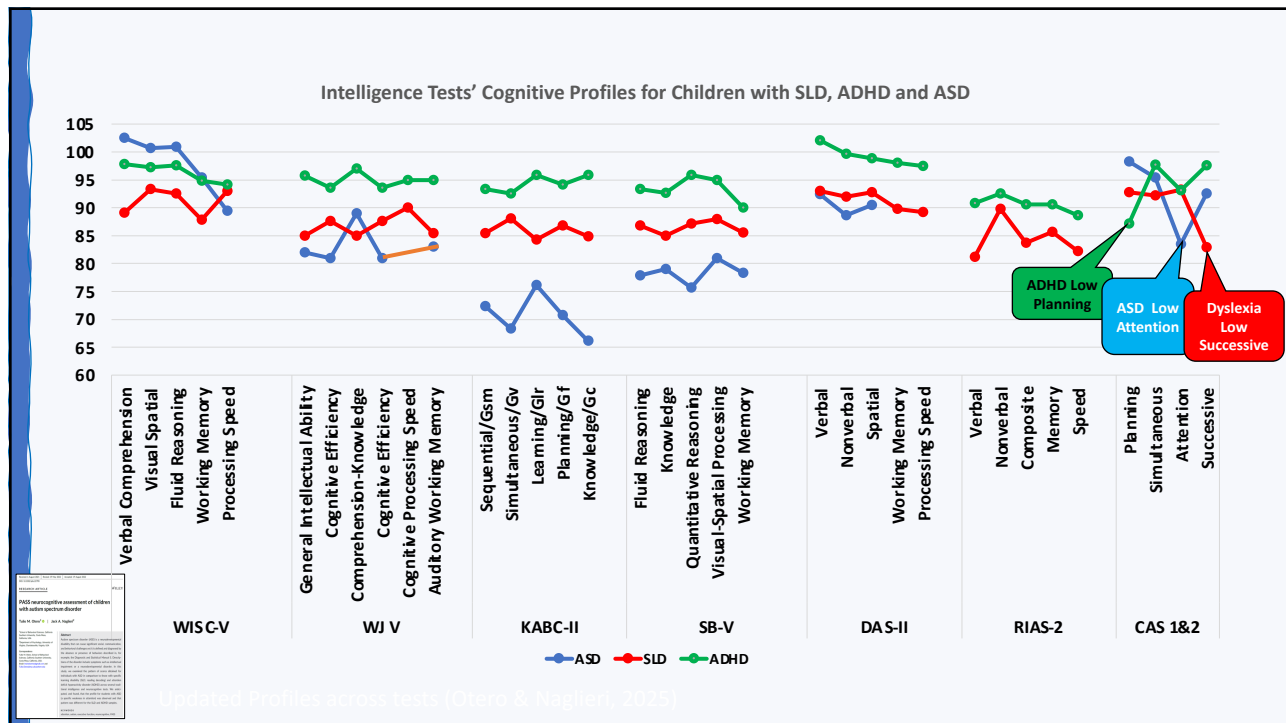


- Discrepancy between high and low processing scores
- Discrepancy between high processing and low achievement
- Consistency between low processing and low achievement



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Each of these research studies indicate that the Full Scale score is the *only* score to interpret!

1. **WISC-V** (Canivez, et al., 2017)
2. **WAIS-IV** (Canivez, et. A, (2010)
3. **WISC-IV Spanish** (McGill & Canivez, (2017)
4. **Canadian WISC-V** (Watkins, et al., 2017)
5. **Stanford-Binet -Fifth Edition** (Canivez, 2008)
6. **British Ability Scales, 3rd ed** (Cucina & Byle, 2017)
7. **Universal Nonverbal Intelligence Test** (Benson, et al., 2020)
8. **Differential Ability Scales-Second Edition** (Canivez & McGill,
9. **Woodcock-Johnson IV Cognitive** (Dombrowski, McGill & Canivez (2017)
10. **Kaufman Assessment Battery for Children-II** (McGill & Spurgin, 2017)
11. **CHC model** - Carroll's Factor-Analytic Studies (Benson, et al. (2018)

Conclusion: The subtests and scales "have little-to-no interpretive relevance above and beyond that of general intelligence"

Support for 'g'
ONLY

CAS is an
exception

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Original Research Article

Unraveling the Multifaceted Nature of Intelligence: A Correlated Factor Model Approach Grounded in PASS Theory

Timothy C. Papadopoulos¹ , George Spanoudis¹,
Jack A. Naglieri², and Jagannath P. Das³

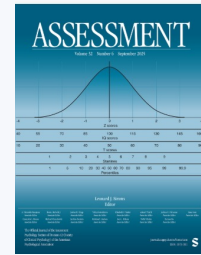
Assessment
1–18
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DOI: 10.1177/10731911251350735
journals.sagepub.com/home/asm
S Sage

Abstract

Intelligence, a subject of profound interest within psychology, has seen extensive exploration of its psychological and psychometric foundations. This study delves into the multifaceted nature of intelligence, using structural equation modeling techniques to examine theory-driven conceptualizations of the construct. We tested several models, including unidimensional, correlated, higher-order, and bifactor symmetrical and asymmetrical models. To enhance the reliability and generalizability of the findings, we used a large and diverse cohort based on the Planning, Attention, Simultaneous, Successive (PASS) theory and the Cognitive Assessment System 2 (CAS2), which was standardized in the United States. Results showed that the correlated factor model, which reflects relationships among cognitive domains, offers the most fitting representation of intelligence. This outcome aligns with the PASS theory's theoretical foundations, emphasizing intelligence's multifaceted nature. Also, our exploration of cultural relevance invariance underscores the importance of considering demographic-related differences in cognitive processes. By endorsing a correlated factor model, our study encourages a subtle understanding of intelligence that acknowledges the diversity and interconnectedness of cognitive processes, with potential implications for education and clinical assessment practices.

Keywords

intelligence, dimensionality, hierarchical models



Papadopoulos,
Spanoudis, Naglieri
and Das (2025)
concluded:

PASS scores have
sufficient specific
variance to be
interpreted.

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PASS Profiles for Gifted Students

Application of the Discrepancy Consistency Method

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A Study of Gifted Students

(Georgiou, G., Dunn, K. & Naglieri, J. A. Neurocognitive Profiles for Students in Gifted Programs: A Pilot Study (2022). Exceptionality Education International, 32, 1-13.).

- N = 142
 - Similar numbers of girls and boys in Grade 4, 5 and 6.
 - all native speakers of English
 - from middle to upper-middle socioeconomic families
- Gifted definition:
 - “Giftedness is exceptional potential and/or performance across a wide range of abilities in one or more of the following areas: general intellectual, specific academic, creative thinking, social, musical, artistic and kinesthetic” (Alberta Education, 2012, p. 6).
- Tests given
 - WASI –II (Vocabulary and Matrix Reasoning)
 - Woodcock-Johnson III Broad Reading score from: Letter-Word Identification, Reading Fluency, and Passage Comprehension
 - Cognitive Assessment System (CAS; Naglieri & Das, 1997) to measure PASS neurocognitive processes

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A Study of Gifted Students

- 54% of gifted students had a **PASS score that was significantly different from that student’s average PASS score**
 - That means the students has a specific neurocognitive processing strength or weakness (i.e., learning profile)

Table 3.

Percentages of Gifted Students with Significant Variability in PASS Standard Scores (N = 142).

		Planning	Simultaneous	Attention	Successive	PASS
PASS Weakness	n	25	6	18	28	77
	%	18%	4%	13%	20%	54%
PASS Strength	n	7	58	13	12	90
	%	5%	41%	9%	8%	63%

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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."



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Wall Street Journal (2003) What happened to Devion?

- 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

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Devion
Graduated High
School
and got an
advanced
degree



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Gifted Ed CAN Make a Difference



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