

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

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NaglieriGiftedTests.com

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Disclosures

Executive Function

SEL & Impairment

Autism

Gifted Identification

PASS Neurocognitive Theory: Assessment & Intervention Handouts

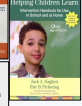
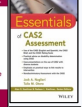












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EDUCABLE ASSESSMENT OF
ADDITIONAL ABILITY TESTS
Naglieri
General
Ability Tests
Now Available

Inequity in Gifted Testing

Achieving Equity

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This site was created to provide both assessment and intervention for both psychologists and educators in public schools.

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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

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Introduction

- Teaching guitar made me wonder about learning
- Interest in intelligence and instruction

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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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1977-1979 University of Georgia

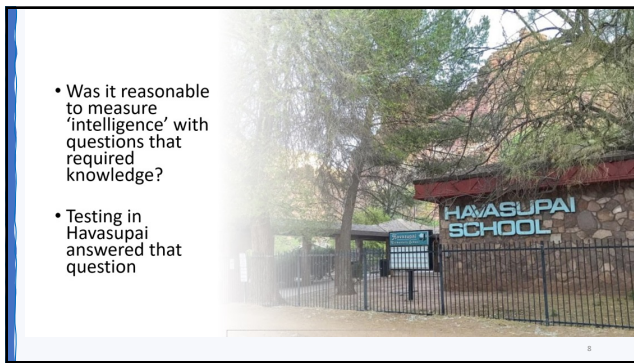
- I worked with the Kaufmans to develop the KABC using the research described by Das, et al book
- Kaufman suggested that the Verbal scale of the WISC-R could be conceptualized as achievement
- Mercer's book *Labeling the Mentally Retarded* (1973) convinced me that intelligence tests should **measure the processes involved in learning** rather than the **accumulation of knowledge**, which is culture specific.
- In 1978 I wrote that **"A test of intellectual ability based upon a theory of processing rather than acquired knowledge may prove to be the next step toward improved assessments."**



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



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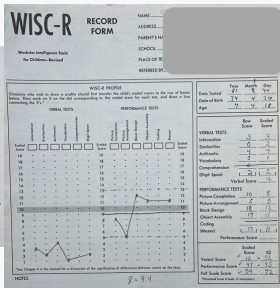
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Test Results and Interpretations:

On the WISC-R, Asanda 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 Asanda speaks mostly Sinal 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: Asanda 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			
Block Design	Verbal Comprehension	Block Design	Verbal Comprehension
Block Design	Verbal Comprehension	Block Design	Verbal Comprehension
Block Design	Verbal Comprehension	Block Design	Verbal Comprehension
Block Design	Verbal Comprehension	Block Design	Verbal Comprehension
Block Design	Verbal Comprehension	Block Design	Verbal Comprehension
Block Design	Verbal Comprehension	Block Design	Verbal Comprehension
Block Design	Verbal Comprehension	Block Design	Verbal Comprehension
Block Design	Verbal Comprehension	Block Design	Verbal Comprehension
Block Design	Verbal Comprehension	Block Design	Verbal Comprehension



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

Hagler, J. A., & Yazzie, C. (1983). Comparison of the WISC-R and PPVT-R with Navajo children. *Journal of Clinical Psychology*, 39, 588-600.

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

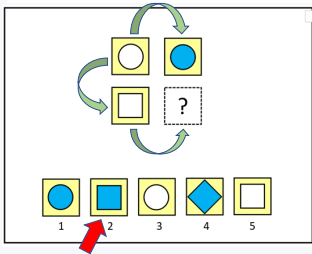
How to achieve this goal?

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 ?

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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

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Naglieri's Nonverbal Tests : 1985 to Present

• Seventh Version of the Naglieri Nonverbal Tests



Timeline of Naglieri's Nonverbal Tests:

- 1985:** MAT Short & Expanded Forms
- 1997:** Naglieri Nonverbal Ability Test
- 2003:** NNAT - Individual
- 2008:** NNAT-2
- 2016:** NNAT3

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
Dr. Kimberly Lencione
Dr. Dana Brubaker

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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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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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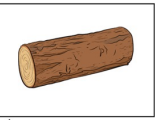
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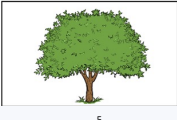
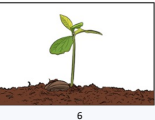
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Verbal

1st Gr. Easy





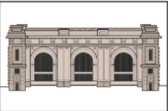








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6th Gr. Hard – discuss each option










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Naglieri General Ability Test - Nonverbal

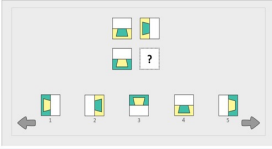
The **Naglieri–NV** measures general ability using questions that require a student to recognize the relationships among the shapes.

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.

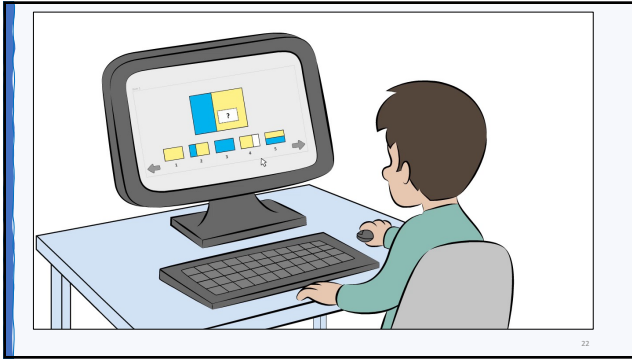




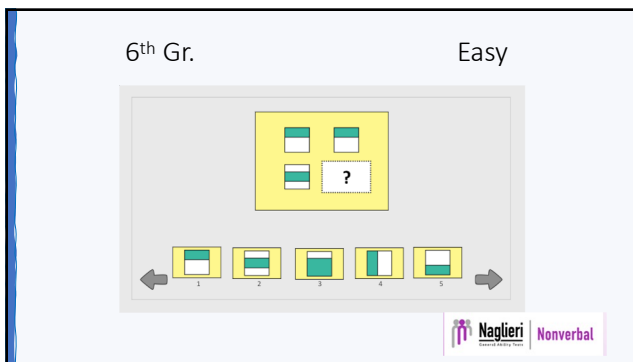




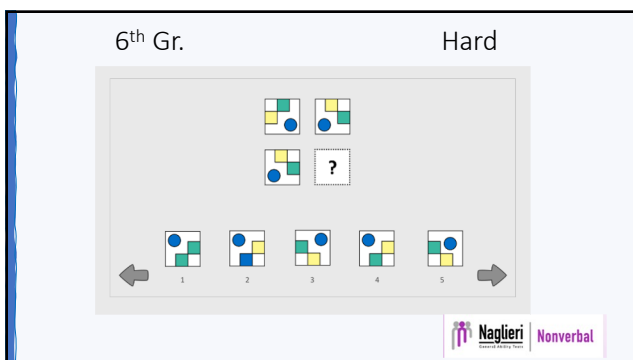
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Naglieri General Ability Test – Quantitative

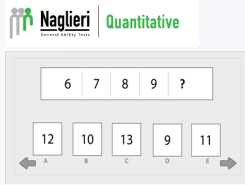
(Naglieri & Lansdowne)

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.



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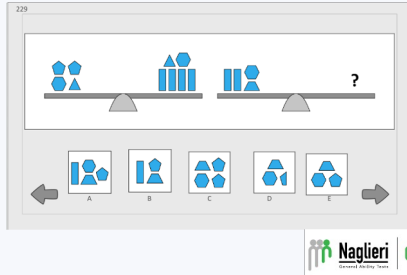
Naglieri General Ability Tests-Grade 1-Easy



Naglieri Quantitative

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Naglieri General Ability Tests-Grade 1-Hard



Naglieri Quantitative
General Ability Tests

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Naglieri Quantitative
General Ability Tests

Naglieri General Ability Test – Quantitative
(Naglieri & Lansdowne)

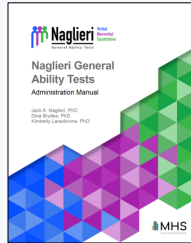
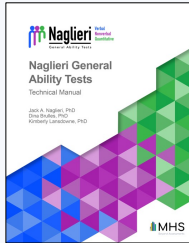
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Now that you have
seen examples of the
items, what do you
think ?

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Naglieri General Ability Tests: Verbal, Nonverbal and Quantitative Technical and Administration Manuals



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About the Tests

The verbal, nonverbal, and quantitative components of the Naglieri General Ability Tests give 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 being represented by the picture and select the correct answer.

The Naglieri General Ability Tests-Nonverbal uses pictures that are arranged in a pattern. The student needs to find the missing picture among choices that are arranged in a pattern. The student needs to identify patterns and sequences of basic math concepts.

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 1 to 100. For example, a 50th percentile rank would mean that the student scored better than 50% 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 to 9.
National Standard Score	A score that compares a student to a national sample of students in the same grade using scores that range from 100 to 160.
Total Score	A score that compares a student to a national sample of students in the same grade based on the sum of scores on all three tests.

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Individual Report

Student Name: John Thompson
Student ID: 12345
Grade: 5
School: Lincoln Public School
School District: Lincoln Public School District

Test Results

Test	Score	Percentile Rank	Stanine	Standard Score
Naglieri-Verbal	105	85	8	135
Naglieri-Nonverbal	110	90	9	140
Naglieri-Quantitative	115	95	9	145
Total Score	330	95	9	160

For more information
on the Naglieri General Ability Tests™, scan the QR code or visit www.naglieri.com.

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Response Style Indicator Legend	
CompletionTime	The amount of time in minutes from when the student started the items to when they timed out or submitted the test. *
CompletionTimeFlag	If a student responded to all items within a test in two minutes or less, a flag will appear to indicate an unusually fast response style. **
OmittedItems	Indicates that there is no flag. *
OmittedItemsFlag	The number of items the student viewed but did not answer before they timed out or submitted the test.
OmittedItemsFlag	If a student omitted a certain number of items on the test, a flag will appear. For students in kindergarten and Grade 1, the warning appears if they omit 10 or more items on the test and for students in Grades 2 to 6, the warning appears if they omit 5 or more items on the test. **
IdenticalResponses	Indicates that there is no flag.
IdenticalResponses	The number of identical responses (e.g., selecting option 2) a student provided in a row.
IdenticalResponsesFlag	If a student provided identical responses to 10 or more consecutive items on the test, a flag will appear. **
InconsistentResponses	If a student provided identical responses to 10 or more consecutive items on the test, a flag will appear. **
InconsistentResponsesFlag	Indicates that there is no flag.
Score Legend	The ratio between the number of correct responses for harder items and the number of correct responses for easier items.
Attempted	If a student has a smaller ratio (i.e., values below 0.8) a flag will appear which indicates that the student correctly answered more of the difficult items on the test compared to the easier items. **
Attempted	Indicates that there is no flag.
Attempted	Indicates if the student completed the test. CBS (Cannot Be Scored) indicates a test was not completed or attempted, and therefore no score can be calculated.
Attempted	The date the student completed the test.
Attempted	Indicates if the student timed out of the test before completing all the items.
Attempted	The number of items the student attempted before they timed out or submitted the test.
Attempted	The sum of the items answered correctly on a specific test, up to the point where the discontinuous rule is met.
Attempted	The percentage of students in the norm sample who obtained the same or lower score than the score obtained by the student.
Attempted	The value a student ranks out of nine broad categories.
Attempted	The student's ability, relative to the average of the norm sample.
Attempted	This shows a range of values based on the standard score that you can be 95% confident contains the student's true score.
Attempted	When a student has completed all three tests, a Total Score based on all three tests is computed. When a student has completed only two tests, a Total Score based on the two-test combination is computed.
Additional Information Legend	
-1	Indicates a student never saw the item.
Duplicate	Indicates that 2 or more of the same test records exist for this student ID. The most recent record has been scored.
Duplicate	*Note: If the timer is turned off on the student's test, the completion time will only reflect the time spent in the test before the timer was turned off. This may result in a completion time flag if the timer was turned off before 2 minutes.

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Research Evidence of Equity

Selvamannan, 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.

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

Trivial Standard Score Differences

Test	English	Non-English
Verbal	97.9	98.4
NonVerbal	101.3	101.2
Quantitative	100.8	99.8

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	979	14.5	-0.04	[-0.07, 0.03]	-0.32
	Non-English	98.4	14.8			
Naglieri-NV	English	1013	14.1	0.00	[-0.07, 0.02]	0.04
	Non-English	1012	13.5			
Naglieri-Q	English	100.8	14.1	0.07	[-0.07, 0.03]	0.65
	Non-English	99.8	12.9			

Note. N = 48 for each English and Non-English group. Statistics produced from a Welch Two-Sample t-Test. Cohen's d and effect size = 0.20 to 0.40 medium effect size = 0.50 to 0.70 large effect size = 0.80. Positive Cohen's d values imply 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

Test	Female	Male
Verbal	100.9	99.0
Nonverbal	100.5	99.4
Quantitative	98.7	101.3

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

Test	Gender		Cohen's d
	Female	Male	
Naglieri-V	M	100.9	0.13
	SD	14.7	
Naglieri-NV	M	100.5	0.08
	SD	14.7	
Naglieri-Q	M	98.7	-0.17
	SD	14.4	
Total Score	M	100.1	0.01
	SD	14.7	

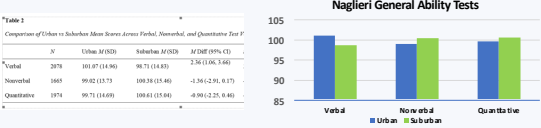
Note. Female N = 3,000 and Male N = 2,999. Guidelines for interpreting Cohen's d: small effect size = 0.20 to 0.40 medium effect size = 0.50 to 0.70 large effect size = 0.80. Positive Cohen's d values imply higher scores for Female. Naglieri-V = Naglieri General Ability Tests-Verbal; Naglieri-NV = Naglieri 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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Urban and Suburban Childrens' Performance on the Naglieri Verbal, Nonverbal and Quantitative General Ability Tests

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 = 1974). 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.



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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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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.*

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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 with different content- Verbal, Nonverbal and Quantitative.



This provides MULTIPLE measures of general ability, 3 Total Scores.



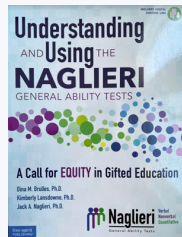
More students will be found if all three tests are given than if only one is given

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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

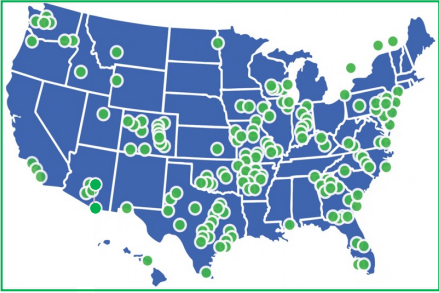
Dr. Jack Naglieri, Dr. Gina Brulles, and Dr. Kimberly Lasdowse



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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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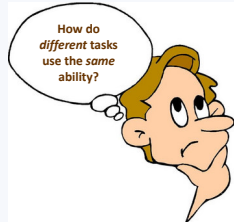
Ideas to
Consider



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These tests Measure General Ability?

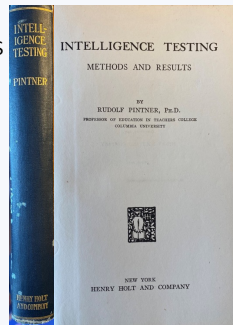


- Even though the tests have different content (shapes, words, numbers) they all rely on general ability ('g') as described by Wechsler and many others
- What IS GENERAL ABILITY?

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General Ability Definitions

- "we did not start with a clear definition of general intelligence... [but] borrowed from every-day life a vague term implying all-round ability and... we [are] still attempting to define it more sharply and endow it with a stricter scientific connotation" (p. 53, Pintner, 1923)".



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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)

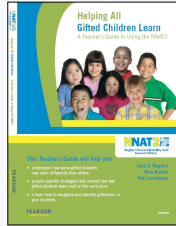
"The aggregate or global capacity of the individual to act purposefully, to think rationally, and to deal effectively with his environment (1939)"



48

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



49

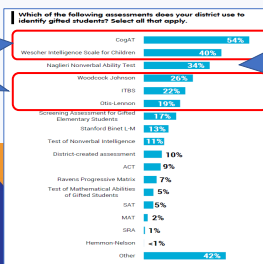
Ideas to Consider

- My equity journey
- New tests of General Ability
- What is General Ability
- Identification of gifted students
- Local and National Norms

50

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.

Edison Research Center
Gifted Education
Results of a National Survey

51

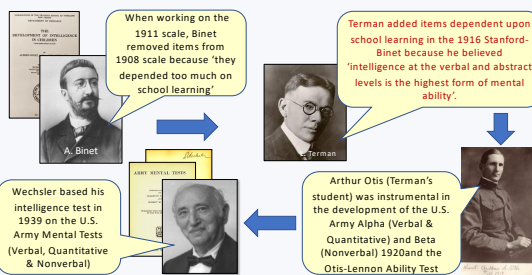
Why do we measure intelligence the way we do?

The History of IQ tests



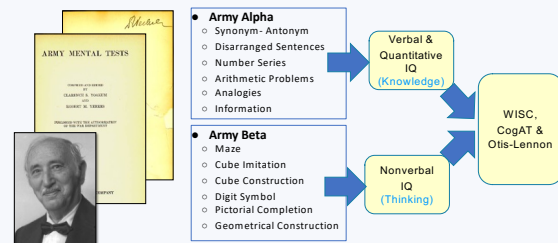
52

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



53

Army Alpha & Beta - Wechsler



54

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)"



55

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 *have 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

56

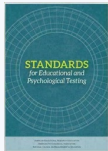
Knowledge is Included in "Ability" Tests

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

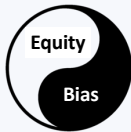
57

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.**



58

58

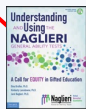
	Race	Ethnic
Tests that require knowledge	8.5	4.8
Otis-Lennon School Ability Test (one school district)	13.6	-
CogAT7 Nonverbal (one school district)	11.8	7.6
CogAT-Total (V, Q & NV)	7.0	4.5
CogAT7 - Verbal	6.6	5.3
CogAT- Nonverbal	6.4	2.9
CogAT7-Quantitative	5.6	3.6
Tests that require minimal knowledge	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 Auer and O'Neal (1986), Stanford-Binet IV by Wasserman (2000), Woodcock-Johnson III race differences by Edwards and Oakland (2006) and ethnic differences by Soto-Oyegre, Ortiz, Paragan, and Chaplin (2013), CogAT7 by Cernan, Nollmer and Bertsch (2018) and Johnson (2016), WISC-V by Kaufman, Barford, and Coalson (2016), K-ABC-II by Lichtenberger, Volkmar, Kaufman & Kaufman, (2005) and Schacter and Kaufman (2015), CAS by Naglieri, Rogahn, Matto, and Aquilino (2005), CAS-2 and CAS-2-Brief by Naglieri, Das, and Goldstein, 2004a and 2004b; Naglieri Nonverbal Ability Test by Naglieri and Bonning (2000), and Naglieri General Ability Tests by Naglieri, Brulles, and Lansdowne (2022 & 2024).

	Race	Ethnicity
	Min = 8.2	Min = 6.8
Tests that require knowledge		
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
WI-III (normative sample)	10.9	10.7
KABC-II 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 (normative sample)	8.1	8.2
KABC-II MPI (normative sample adjusted for sex and parental ed)	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
CogAT7 - Nonverbal	6.4	2.9
CogAT7-Quantitative	5.6	3.6
Tests that require minimal knowledge	Min = 4.0	Min = 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

60

60

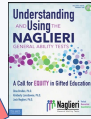
Numbers of Gifted Students Missed = 1,266,708

	N in Public Education K-12 in 2020	N Potentially Gifted (8% to 12 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

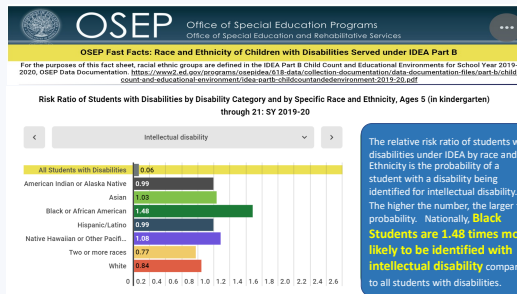
895,200

371,508

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



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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.

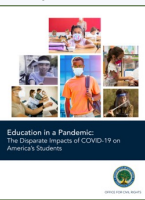
<https://sites.ed.gov/idea/osep-fast-facts-race-and-ethnicity-of-children-with-disabilities-served-under-idea-part-b/>
https://daaamerica.org/ida_today/disproportionate-identification-of-students-of-color-in-special-education/

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Academic Learning Loss & COVID

- COVID-19 has deepened the impact of disparities in access and opportunity for students of color
- Students of color are even further behind than they were before the pandemic
- ELL students had the dual challenge of learning content and English.
- These students' **intellectual scores on traditional tests** will reflect that larger learning gap related to COVID

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

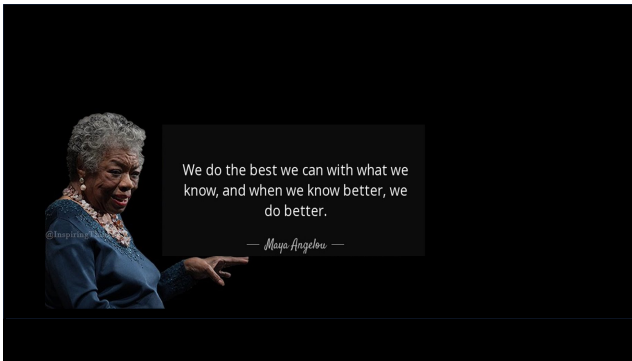


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Use of the Naglieri General Ability Tests

- Each test can be used individually or in any combination
- All raw scores are automatically converted into derived scores using local norms as determined by the district personnel and NATIONAL NORMS (Post Covid)
- Ordering information is available from Debbie Roby, GATE Account Executive, by email [debbie.robby@mhs.com] and phone [214.908.7769]
- To contact the authors:
jnaglieri@gmail.com dbrulles@gmail.com kimberly.lansdowne@asu.edu

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

— Maya Angelou —

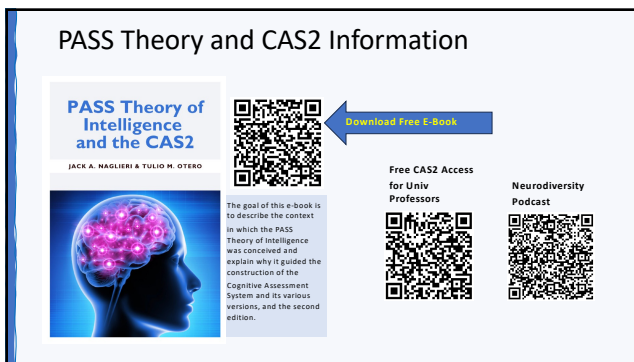
Change
Demands
Courage to
Think Differently

Socially just assessment requires self-reflection (What am I doing?) and self-correction (I will choose something new) in response to current research (There is a better way!).

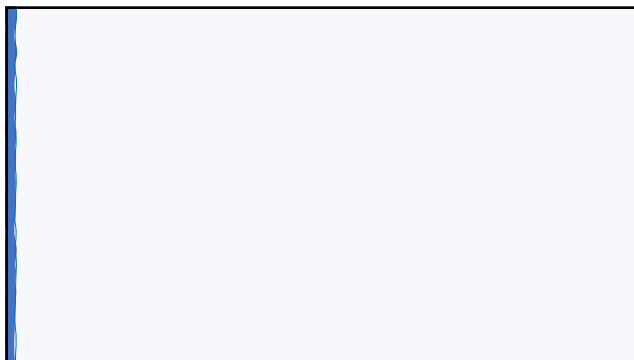
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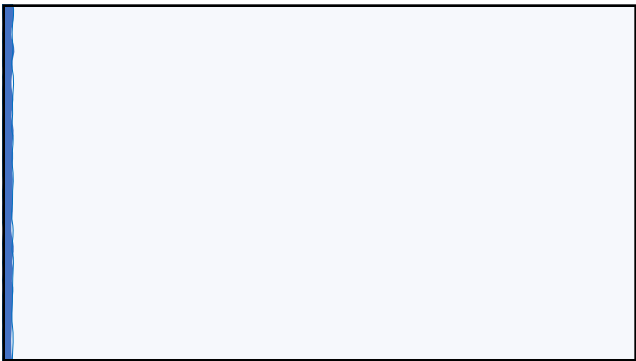
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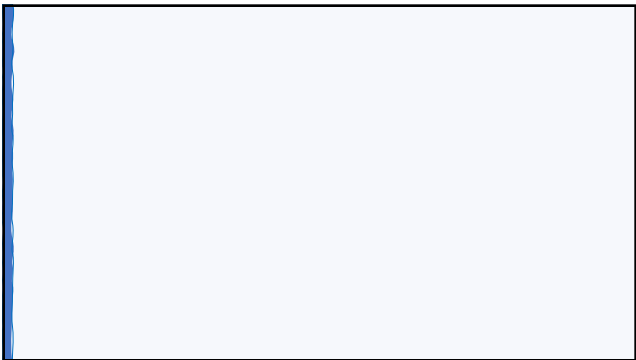
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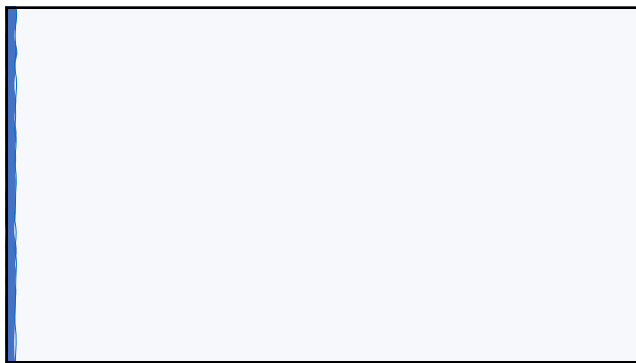
78



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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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Using Local Norms-a strategy to increase underrepresented populations in gifted services

- National norms-** Compare a student's performance to peers from the same age or grade across the country
- Local norms-** Compare a student's performance to grade level peers in the same district, school or specific grade
 - district level norms
 - school building level norms
 - group norms (ie. if 30% of the students are demographic), compare scores across that group)

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Naglieri General Ability Tests International Use

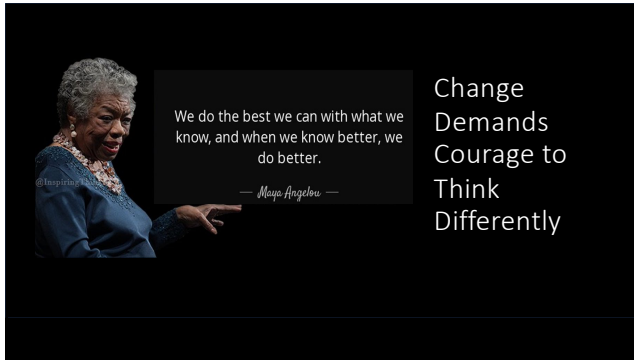
- Use a Local Norming Procedure
- Obtain scores for **ALL** students (not only referred students) in the grades for which the GT decisions is needed
- Decide how the information obtained for each student is to be evaluated (i.e., average, and or logic) and if it is to be weighted
- Evaluate the outcome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



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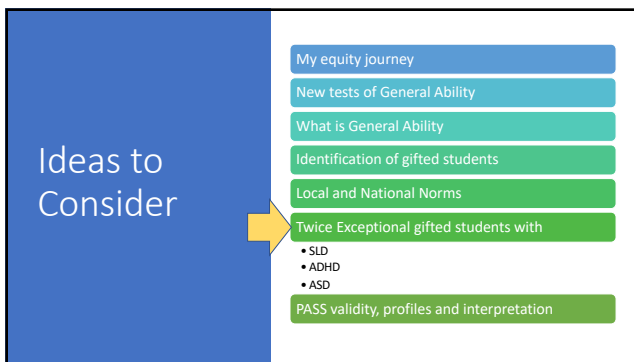
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We do the best we can with what we know, and when we know better, we do better.
— Maya Angelou —

Change
Demands
Courage to
Think
Differently

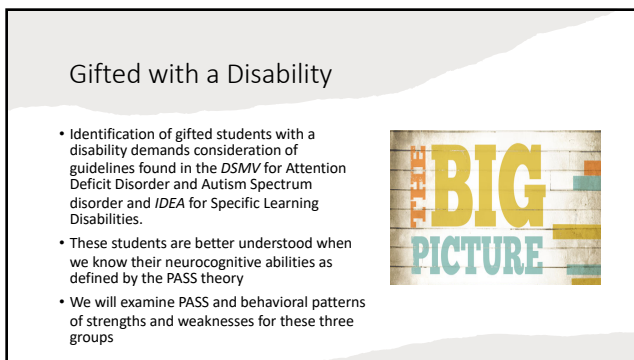
86



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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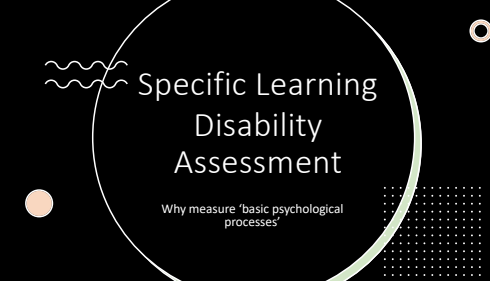


Gifted with a Disability

- Identification of gifted students with a disability demands consideration of guidelines found in the *DSMV* for Attention Deficit Disorder and Autism Spectrum disorder and *IDEA* for Specific Learning Disabilities.
- These students are better understood when we know their neurocognitive abilities as defined by the PASS theory
- We will examine PASS and behavioral patterns of strengths and weaknesses for these three groups



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[illegible]

Specific Learning Disability Assessment

Why measure 'basic psychological processes'?

Gifted Students with Disabilities

- Twice exceptional, or 2E, refers to intellectually gifted children who have a **specific learning disability (e.g., dyslexia)**, Attention Deficit Hyperactivity Disorder (ADHD), or autism spectrum disorder (ASD).
- Specific learning disability assessment involves intellectual and academic assessment typically by a school or private psychologist

"(30) SPECIFIC LEARNING DISABILITY.—

"(A) IN GENERAL.—The term "specific learning disability" means a disorder in 1 or more of the basic psychological processes involved in understanding or in using language, spoken or written, which disorder may manifest itself in the imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations.

"(B) DISORDERS INCLUDED.—Such term includes such conditions as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia.

"(C) DISORDERS NOT INCLUDED.—Such term does not include a learning problem that is primarily the result of visual, hearing, or motor disabilities, of mental retardation, of emotional disturbance, or of environmental, cultural, or economic disadvantage.

NIH-funded study finds dyslexia is not tied to IQ (2011)

- Research on brain activity fails to support widely used ability/achievement discrepancy approach to identify students with dyslexia.
- Regardless of high or low overall scores on an IQ test, children with dyslexia show similar patterns of brain activity.
- The results call into question the discrepancy model — the practice of classifying a child as dyslexic on the basis of a DISCREPANCY between reading ability and overall IQ scores.

<https://www.nih.gov/news-events/news-releases/nih-funded-study-finds-dyslexia-not-tied-iq>

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Efforts to Identify Gifted Students (2018)

- 'NAGC recommends ...using WISC-V expanded and ancillary index scores ... to document giftedness ... patterns of strengths and weaknesses for twice exceptional children and ensure that gifted programs are accessible to children with disabilities'

NATIONAL ASSOCIATION FOR Gifted Children

Position Statement
(Approved August 2018)

Use of the WISC-V for Gifted and Twice Exceptional Identification recommendations for use

In comprehensive assessment of gifted and twice exceptional children, the WISC-V Full Scale IQ score should not be required. The Full Scale score may be disadvantageous for such students and may impede efforts to ensure that gifted classrooms, programs, and schools are accessible to children with disabilities.

Instead, NAGC recommends that any one of the following WISC-V scores (subtests in parentheses), should be acceptable for use in the selection process for gifted programs if it falls within the confidence interval of the required score for admission:

- the Verbal (Expanded Crystallized) Index (VECI) (SI, VC, IN and CO),
- the Nonverbal Index (NVI) (BD, MR, CD, FW, VP, and PS),
- the Expanded Fluid Index (EFI) (VIR, FW, PC, and AR),
- the General Ability Index (GAI) (BD, SI, MR, VC and FW),
- the Full Scale IQ Score (FSIQ) (BD, SI, MR, DS, CS, VC, and FW), and/or
- the Expanded General Ability Index (EGAI) (SI, VC, IN, CO, BD, MR, FW and AR).

The Quantitative Reasoning Index (QRI) (FW and AR) serves as a good indicator of mathematical talent. Information about scores is available in test manuals and WISC-V Technical Reports #1 and 5.

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Support for Scales, Subtests or 'g'?

Psychological Assessment

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

Canivez, Gary L., Watkins, Marley M., Dombrowski, Marley C., Watkins, G. L., Watkins, M. H., & Dombrowski, G. C. (2015). Structural validity of the Wechsler Intelligence Scale for Children-Fifth Edition: Confirmatory factor analyses with the 16 primary and secondary subtests. *Psychological Assessment*, 28(4), 488-497.

- ...The small portions of variance uniquely captured by [subtests]... render the group factors [scales] of questionable interpretive value independent of g (FSIQ general intelligence)

- Present CFA results confirm the CFA results (Canivez, Watkins, & Dombrowski, 2015; Dombrowski, Canivez, Watkins, & Beaupre (2015); and Canivez, Dombrowski, & Watkins (2015)).

Revisiting Carroll's Survey of Factor-Analytic Studies: Implications for the Clinical Assessment of Intelligence

Nicholas F. Brown and A. Alexander Beaton
Ryan Carroll

Ryan L. McGill
Christopher P. Ryan

Mark C. Dombrowski
Paul Vorhies

- The results of this study indicate that most cognitive abilities specified in John Carroll's three-stratum theory have little-to-no interpretive relevance above and beyond that of general intelligence.

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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, 2016)
9. Woodcock-Johnson IV Cognitive (Dombrowski, McGill & Canivez (2017)
10. Kaufman Assessment Battery for Children-II (McGill & Spurgin, 2017)
11. CHC model based on Carroll's Survey of Factor-Analytic Studies (Benson, et al. (2018)

Conclusion: These tests are validated as measures of general ability, i.e.

Support for 'g' ONLY

CAS is an exception

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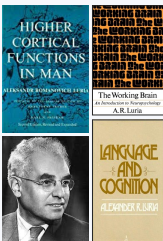
95

Alternatives to Traditional Intelligence Tests ?

Wechsler, Binet, CHC, OLSAT, CogAT

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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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Neurodiversity Defined

What Is Neurodiversity?
by Heidi Wiggin
Medically reviewed by Dr. David Bruns, MD on April 27, 2021

There's a growing push to focus on our brain differences, not deficits. This wider view of "normal" is a big part of something called neurodiversity. Advocates hope the idea expands how we think of developmental disorders, including attention deficit hyperactivity disorder (ADHD).

What would happen if the world viewed neurodevelopmental differences like ADHD, autism, and learning disabilities differently? If everyone noticed the strengths that can come from these differences first, instead of the challenges?

'Neurodiversity' is a concept that implies that neurological difference is best understood as an inherent and valuable part of the range of human variation, rather than a pathological form of difference.

Dyck E. Russell G. (2020) Challenging Psychiatric Classifications: Healthy Autistic Diversity and the Neurodiversity Movement. In: Taylor S. Brumby A. (eds) Healthy Minds in the Twentieth Century. Mental Health in Historical Perspective. Palgrave Macmillan, Cham. https://doi.org/10.1007/978-3-030-47278-3_8

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PASS Theory Based on Brain Function (see Naglieri & Otero, 2017)

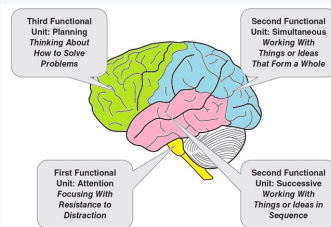


Figure 1.2 Three Functional Units and Associated Brain Structures
From: *Essentials of CAS2 Assessment*. Naglieri & Otero, 2017

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PASS Theory: Planning

- Planning** is a neurocognitive ability that a person uses to determine, select, and use efficient solutions to problems
 - problem solving
 - developing plans and using strategies
 - retrieval of knowledge
 - impulse control and self-control
 - control of processing
- Planning tests measure Executive Function

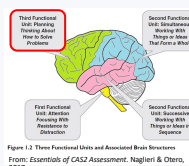


Figure 1.2 Three Functional Units and Associated Brain Structures
From: *Essentials of CAS2 Assessment*. Naglieri & Otero, 2017

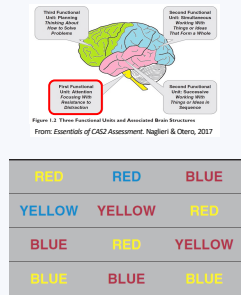
A	B	C	D
X	O	O	X
A	B	C	D
X	O	O	X
A	B	C	D
X	O	O	X
A	B	C	D
X	O	O	X

100

100

PASS Theory: Attention

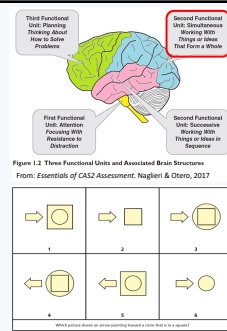
- Attention is a basic psychological process we use to attend to some stimuli and ignore others
 - Focus our cognitive activity
 - Selective attention
 - Resistance to distraction
 - Listening, as opposed to hearing
- All academic tasks demand attention but some more than others



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PASS Theory: Simultaneous

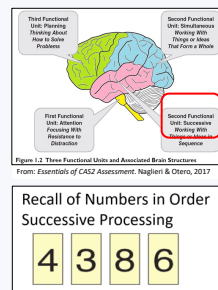
- **Simultaneous** processing is used to integrate stimuli into groups
 - Each piece must be related to the other
 - Stimuli are seen as a whole
- Academics:
 - Reading comprehension
 - geometry
 - math word problems
 - whole language
 - verbal concepts



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PASS Theory: Successive

- **Successive** processing is a basic psychological process we use to manage stimuli in a specific serial order
 - Stimuli form a chain-like progression
 - Recall a series of words
 - Decoding words
 - Letter-sound correspondence
 - Phonological tasks
 - Understanding the syntax of sentences
 - Comprehension of written instructions



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How to Measure PASS with CAS2

- CAS2 Core & Extended English & Spanish for Comprehensive Assessment
- CAS2 Brief for re-evaluations, instructional planning, gifted screening
- CAS2 Rating Scale for teacher ratings
- CAS2: Online coming soon

20 min	40 min	60 min
CAS2 Rating Scale (4 subtests)	CAS2 Brief (4 subtests 20 minutes)	CAS2 Core (8 subtests 40 minutes)
Total Score	Total Score	Full Scale
Planning Simultaneous Attention Successive	Planning Simultaneous Attention Successive	Planning Simultaneous Attention Successive
Spanish & English	Spanish & English	Spanish & English

CAS2 Extended
(12 subtests
60 minutes)

Full Scale
Planning
Simultaneous
Attention
Successive
Supplemental Scales
Executive Function
Working Memory
Verbal / Nonverbal
Visual / Auditory
Speed / Fluency

CAS2 Digital
(English & Spanish)
coming in 2022

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How to use PASS Neurocognitive Theory to Identify a Student with a Specific Learning Disability

SLD Identification should MATCH IDEA definition

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Discrepancy Consistency Method (DCM)

- ...first introduced in 1999 and most recently in 2017

Pattern of Strengths and Weaknesses Using the Discrepancy/Consistency Method for SLD Determination

Three methods for detecting a pattern of strengths and weaknesses (PSW) that can be used as part of the process of identifying a student with a specific learning disability (SLD) have been suggested by Naglieri in 1999, Hale and Fiorello in 2004, and by Flanagan, Ortiz, and Alfonso in 2007. These authors share the same goal: to present a procedure to detect a PSW in scores that can be used to identify an SLD (sometimes referred to as a third option; Zirkel & Thomas, 2010). Despite differences in the composition of the scores used and the definitions of what constitutes a basic psychological process, these methods all rely on finding a combination of differences as well as similarities in scores across academic and cognitive tests. Our approach to operationalizing a PSW is called the Discrepancy/Consistency Method (DCM) for the identification of SLD. Determining SLD is essentially based on the combination of PASS and achievement test scores, which has two main ingredients. First, there must be evidence of a PASS cognitive weakness as described in Step 1 of this chapter, and, second, achievement test scores should show substantial variability that aligns with the high and low PASS scores. What

DON'T FORGET 3.5

The essence of the Discrepancy/Consistency Method is two discrepancies and one consistency.

Discrepancy 1:
Significant variability among the PASS scores indicating a weakness in one or more of the basic psychological processes.

Discrepancy 2:
Significant difference between high PASS scores and low achievement test scores.

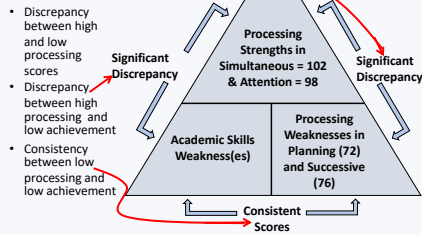
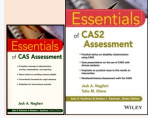
Consistency:
No significant difference between low PASS scores and low achievement.

j.naglieri@gmail.com

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Answering the Question: Why students succeed & struggle

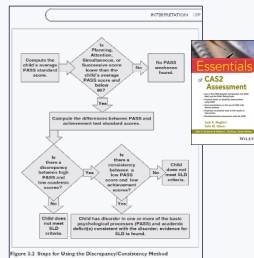
- The Discrepancy Consistency Method (DCM) was first introduced in 1999 (most recently in 2017)



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Discrepancy Consistency Method (Naglieri & Otero, 2017)

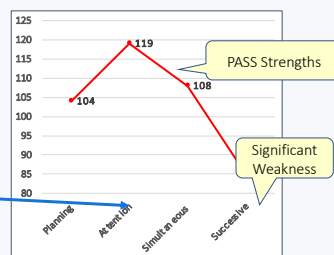
- Determine if the PASS scores vary significantly from the examinee's average PASS score and the lowest score is below average (<90) (Table 3.5)
- Determine if the high PASS scores are significantly different from the low achievement scores (Appendix A-F)
- Determine if the LOW PASS score is or is not significantly different from the low achievement scores (Appendix A-F)



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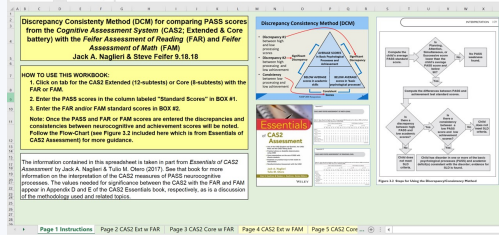
Evidence of a Disorder in Basic Psychological Processes

- PASS scores show significant variability
- Strengths in Planning, Attention and Simultaneous Processing
- Weaknesses in Successive processing
- Supports SLD eligibility



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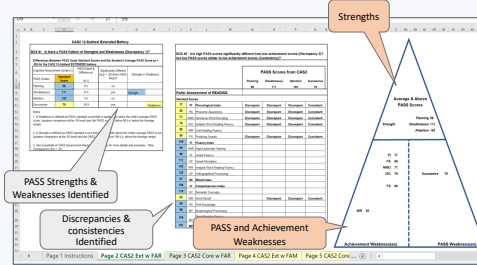
FREE CAS2 PSW Analyzer for FAR, FAM, & FAW, WI4, KTEA3, WIAT4



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CAS2 PSW Analyzer for WI4, KTEA3, FAR, FAM

- Enter PASS and Achievement test standard scores and all comparisons are calculated



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Research on PASS Profiles

Students receiving special education were more than four times as likely to have at least one PASS weakness and a comparable academic weakness than those in regular education

Identifying Students With Learning Disabilities: Composite Profile Analysis Using the Cognitive Assessment System

Lenora V. Huang¹, Achille N. Barrios², and Ron Curt D'Amato³

Abstract
The objective of cognitive profiles in children with learning disabilities (LD) has been a primary focus in the identification process. Subsequent to the identification process, the identification of specific academic weaknesses and strengths is critical to effective remediation. This study examined the use of the Cognitive Assessment System (CAS) to identify students with learning disabilities (LD) and to examine the relationship between academic weaknesses and strengths and the identification of LD. The study included 1,692 students with LD and 1,692 students in regular education. The results of the study are discussed in terms of the identification of LD and the relationship between academic weaknesses and strengths and the identification of LD.

School Psychology Quarterly, Vol. 13, No. 4, 2000, pp. 413-431

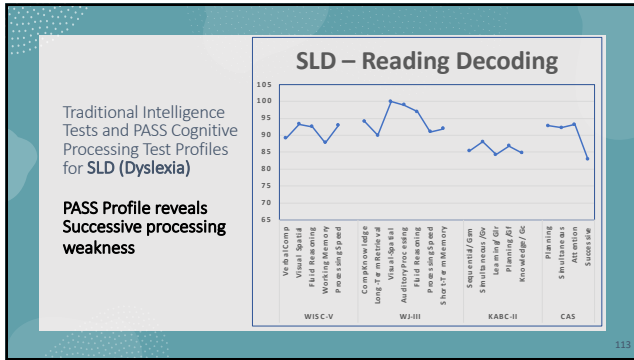
Can Profile Analysis of Ability Test Scores Work? An Illustration using the PASS Theory and CAS with an Unselected Cohort

Jack A. Naglieri
George Mason University

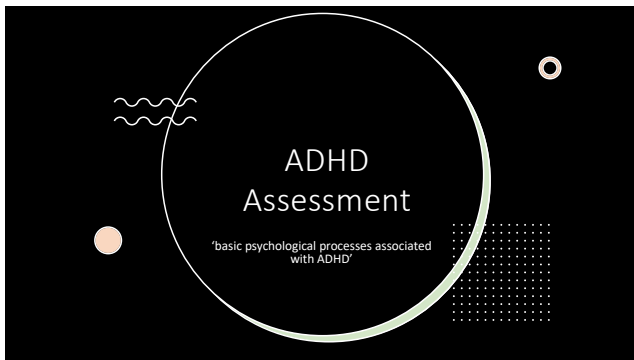
A new approach to profile analysis of individual children's profiles on a set of ability test scores was studied. The PASS theory, Strengths, Weaknesses, and Successes (PASSWS) profiles measured by the Cognitive Assessment System were used to illustrate how profile analysis could be accomplished. Three methods were used to examine the PASS profiles for a nationally representative sample of 1,692 children from ages 5 through 17 years. The results indicated that the PASS profiles were a valid and useful tool for profile analysis. Children with significant PASS weaknesses, relative to their

"Ten core profiles from a regular education sample (N = 1,692) and 12 profiles from a sample of students with LD (N = 367) were found.

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Gifted & ADHD

- Twice exceptional, or 2E, refers to intellectually gifted children who have a specific learning disability (e.g., dyslexia), **Attention Deficit Hyperactivity Disorder (ADHD)**, or autism spectrum disorder (ASD).
- ADHD diagnosis is based on observable behaviors
- Three types of ADHD are Inattentive, Hyperactive / Impulsive and Combined Type

DSM-5 Diagnostic Criteria for ADHD

Symptoms and/or behaviors that have persisted 6 months in 2 settings (e.g., school, home, church). Symptoms have been regularly impaired academic, social, and/or occupational functioning. In children aged 17 years, 12 symptoms are necessary; in those aged 17 years, 13 symptoms are necessary.

Inattentive Type	- Displays poor listening skills - Loses and/or misplaces items needed to complete activities or tasks - Is distracted by external or unimportant stimuli - Forgetful daily activities - Diminished attention span - Lacks ability to complete schoolwork or other assignments or to follow instructions - Avoids or is disinclined to begin homework or activities requiring concentration - Fails to focus on details and/or makes thoughtless mistakes in schoolwork or assignments
Hyperactive/Impulsive Type	Hyperactive Symptoms: - Constantly "on the go" or fidgets with feet/hands - Has difficulty remaining still or is restless - Appears to be driven by "a motor" or is often "on the go" - Lacks ability to play and engage in leisure activities in a quiet manner - Incapable of staying seated in class - Overly talkative Impulsive Symptoms: - Difficulty waiting turn - Interrupts or intrudes into conversations and activities of others - Impulsively starts but doesn't finish projects or assignments
Additional Requirements for Diagnosis	- Symptoms present prior to age 12 years - Symptoms not better accounted for by a different psychiatric disorder (e.g., mood disorder, anxiety disorder) and do not occur exclusively during a psychotic disorder (e.g., schizophrenia) - Symptoms not exclusively a manifestation of oppositional behavior
Classification	Combined Type: - Patent meets both inattentive and hyperactive/impulsive criteria for the past 6 months Primarily Inattentive Type: - Patent meets inattentive criterion, but not hyperactive/impulsive criterion, for the past 6 months Primarily Hyperactive/Impulsive Type: - Patent meets hyperactive/impulsive criterion, but not inattentive criterion, for the past 6 months

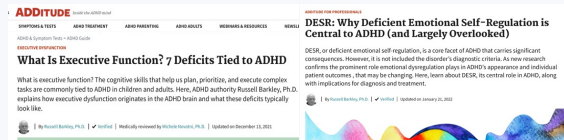
Symptoms may be classified as mild, moderate, or severe based on symptom severity.

Source: DSM-5 Diagnostic and Statistical Manual of Mental Disorders, 5th edition. ADHD: attention deficit hyperactivity disorder.

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ADHD & Executive Function – Russell Barkley

- ADHD is diagnosed by examination of behaviors
- BUT these behaviors are a reflection of a **COGNITIVE PROCESSING** disorder– specifically the concept of **EXECUTIVE FUNCTION** associated with the **FRONTAL LOBES**



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Executive Function Rating Scales

Some published rating scales



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Comprehensive Executive Function Inventory (CEFI) and the Comprehensive Executive Function Inventory Adult (CEFI Adult) by Naglieri & Goldstein

- **Strength based** EF measures
- Items are **positively** worded
- Higher scores = **good** behaviors related to EF
- Scores set at mean of **100**, SD of **15**
- CEFI: Ages 5-18 years rated by a parent, teacher, or the child/youth
- CEFI Adult: Ages 18+ years rated by the adult or an observer



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If Executive Function Underlies ADHD

Some people who have the behavioral symptoms of ADHD may also have a COGNITIVE component to their disorder

The concept of Executive function is associated with the Frontal Lobes making it a basic psychological process

a weakness on a measure of EF could support eligibility as...

Typically, 504 rule is applied. Also consider a Specific learning disability: defined as a disorder in one or more of the basic psychological processes which manifests as academic failure in specific areas...

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If EF may be the Issue...

A comprehensive approach to assessing EF should be used that includes data from measures of:

Behaviors
related to
Cognition

Behaviors
related to Social-
Emotional Skills

Academic
and job skills

Neurocognitive Ability is the foundation

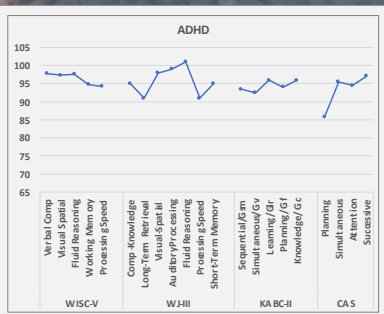


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Intelligence
and Cognitive
Processing
Tests' Profiles
for Students
with ADHD

**PASS Profile
reveals
Planning
processing
weakness**



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Assessment of ADHD

- Is there impairment?

Specify if:

In partial remission: When full criteria were previously met, fewer than the full criteria have been met for the past 6 months, and the symptoms still result in impairment in social, academic, or occupational functioning.

Specify current severity:

Mild: Few, if any, symptoms in excess of those required to make the diagnosis are present, and symptoms result in only minor functional impairments.

Moderate: Symptoms or functional impairment between "mild" and "severe" are present.

Severe: Many symptoms in excess of those required to make the diagnosis, or several symptoms that are particularly severe, are present, or the symptoms result in marked impairment in social or occupational functioning.

— 2 —

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Rating Scale of Impairment (RSI; Goldstein & Naglieri)

Rating Scale of Impairment (RSI) Forms & Scores

RSI (5-12 Years)		RSI (13-18 Years)	
Parent Form	Teacher Form	Parent Form	Teacher Form
41 items	29 items	49 items	29 items

Total Score		Total Score	
RSI Scales School Social Mobility Domestic Family	RSI Scales School Social Mobility	RSI Scales School/Work Social Mobility Domestic Family Self-care	RSI Scales School Social Mobility

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Assessment of Individuals with Autism Spectrum Disorder

Why measure "basic psychological processes"

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Gifted Students with Disabilities

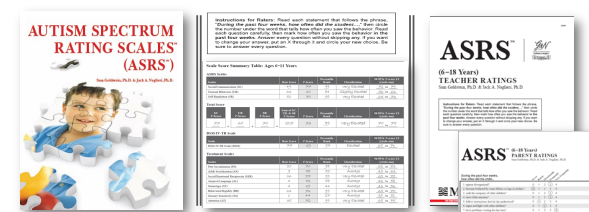
- Twice exceptional, or 2E, refers to intellectually gifted children who have a specific learning disability (e.g., dyslexia), Attention Deficit Hyperactivity Disorder (ADHD), or **autism spectrum disorder (ASD)**.

- ASD is identified using the DSM based on observable behaviors
- Rating scales such as ASRS

DSM-5 Autism Diagnostic Criteria

- A. Persistent deficits in social communication and social interaction across multiple contexts,
- B. Restricted, repetitive patterns of behavior, interests, or activities,
- C. Symptoms must be present in the early developmental period
- D. Symptoms cause clinically significant impairment in social, occupational, or other
- E. These disturbances are not better explained by intellectual disability

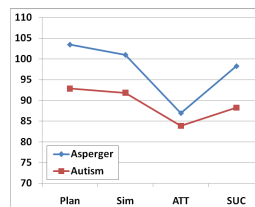
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Behavioral Evaluation of ASD
Parents and teacher Rating Scales for ages 2 – 18 years

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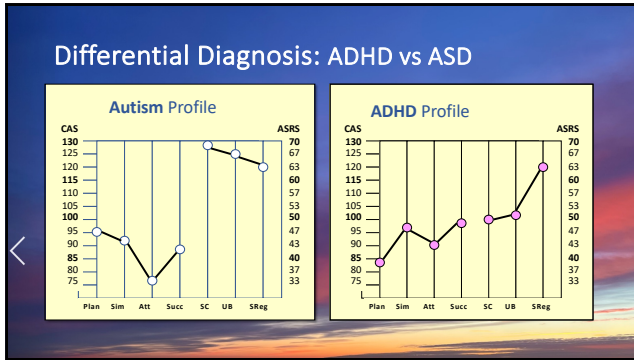
PASS Scores, Autism and Asperger



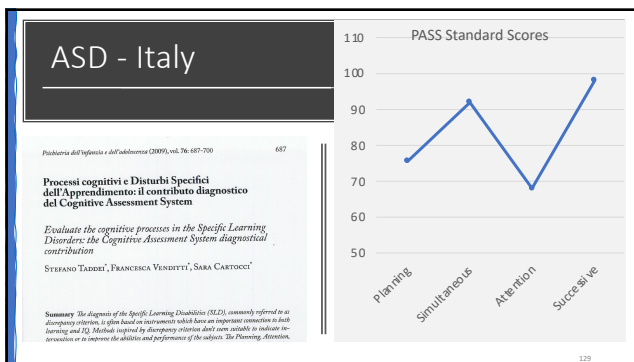
Descriptive Statistics and Comparisons Between Individuals with Autism (n = 20) and Asperger Syndrome (n = 23).

		Mn	SD	F	Sig	d-ratio
PLAN	Asperger	103.5	31.6	1.71	.20	0.40
	Autism	92.9	19.2			
SIM	Asperger	101.0	15.3	3.33	.08	0.54
	Autism	91.9	17.5			
ATT	Asperger	86.9	17.7	0.30	.59	0.17
	Autism	83.9	18.8			
SUC	Asperger	98.3	15.7	2.46	.12	0.47
	Autism	88.3	25.6			

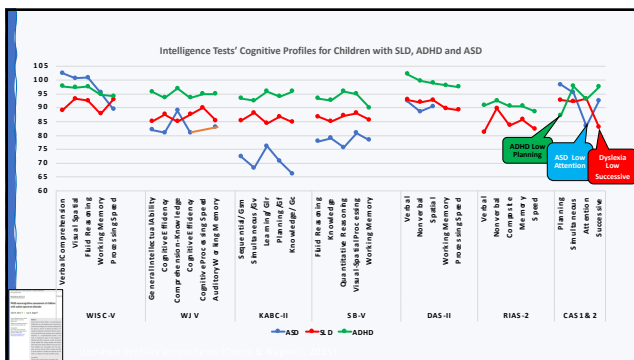
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Race and Ethnic Differences by Ability Test		
Intelligence Test Mean Standard Score Differences by Race and Ethnicity		
	Race	Ethnicity
Tests that require knowledge	11.5	9.2
Otis-Lennon School Ability Test (school system)	13.6	
Stanford-Binet IV (normative sample)	12.6	
WISC-V (normative sample)	11.6	
WI-III (normative sample)	10.9	10.7
CogAT7 (Nonverbal scale)	11.8	7.6
WISC-V (statistical controls normative sample)	8.7	
Tests that require minimal knowledge	3.5	2.6
CAS-2 (normative sample)	6.3	4.5
CAS (statistical controls normative sample)	4.8	4.8
CAS-2 (statistical controls normative sample)	4.3	1.8
CAS-2 Brief (normative samples)	2.0	2.8
Naglieri General Ability Test Verbal	2.2	1.6
Naglieri General Ability Test Nonverbal	1.0	1.1
Naglieri General Ability Test Quantitative	3.2	1.3

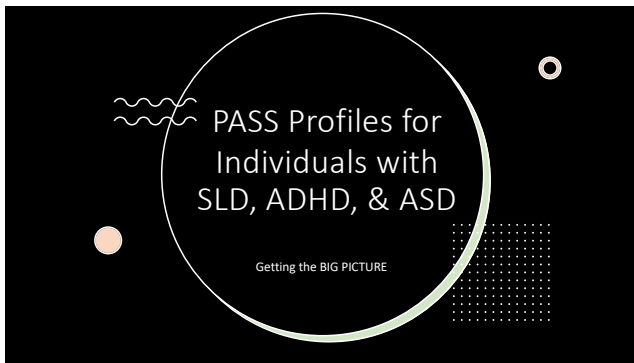
Tests that demand academic knowledge

Tests that do NOT demand academic knowledge

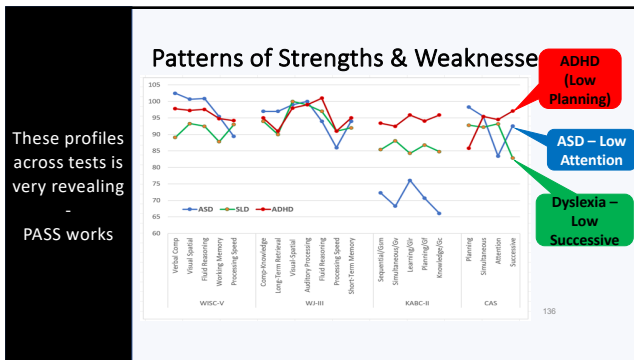
Note: Even though traditional intelligence tests may not show psychometric bias (Worrell, 2019) the large mean score differences suggest they are unfair (Brulles, et al., 2022).

Understanding Using the NAGLIERI
A Call for EQUITY in Gifted Education
From Brulles, D., Landsdowne, K. & Naglieri, L. A. (2022).
Understanding and Using the Naglieri General Ability Tests: A Call to Equity in Gifted Education. Minneapolis, MN: Free Spirit Publishing.

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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

CAS Full Scale scores correlated significantly higher with WJ-III achievement scores than the WASI-II

Table 2
Pearson Correlations of WASI-II FSIQ, Cognitive As

	WASI-II FSIQ	CAS FS
Broad Reading	.24	.53
Broad Math	.34	.50
Mean WJ-III	.34	.62

Table 1
Descriptive Statistics for WASI-II, WJ-III Achievement, and Cognitive Assessment System (CAS) Scores (N = 142)

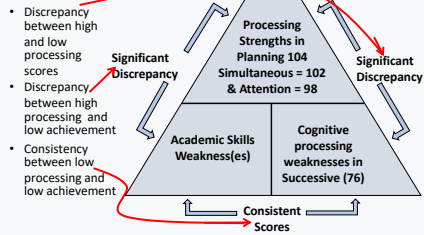
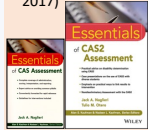
Variable	Mean	SD	Min	Max
WJ-III Achievement				
Broad Reading	125	14	97	166
Broad Math	116	13	91	162
Mean WJ	117	10	94	152
WASI-II FSIQ	122	8	105	145
CAS Full Scale	118	12	91	148
Planning	110	12	77	146
Simultaneous	121	16	88	152
Attention	113	13	79	141
Successive	111	11	81	137

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Answering the Question: Why the student fails?

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

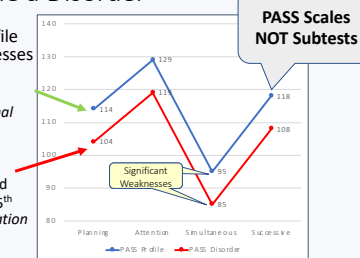


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How to Determine a Disorder

- Two types of PASS profile of Strengths & Weaknesses

- Significant variation in relation to student's average has *instructional relevance*
- Significant variation in relation to student's average AND a standard score less than 90 (< 25th %tile) *supports designation as SLD*



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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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A Study of Gifted Students

- 4% of the students identified as GIFTED have a weakness in PASS 'basic psychology processes' AND an achievement test score below 90.

These students have a specific PASS processing weakness less than 90, suggesting instructional modifications

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

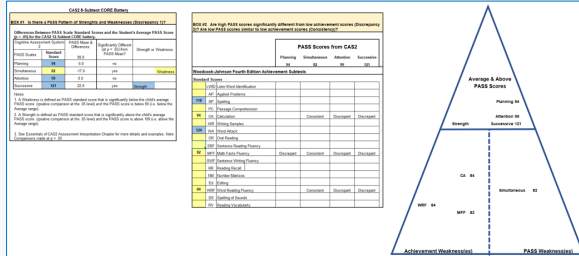
		Planning	Simultaneous	Attention	Successive	PASS
PASS <90	n	4	0	4	4	12
	%	3%	0%	3%	3%	8%
PASS & Skills <90	n	3	0	2	1	6
	%	2%	0%	1%	1%	4%

These students with low PASS scores AND low WJ-III achievement suggests a Specific Learning Disability

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Gifted SLD Student Profile



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Twice Exceptional Conclusions

- Traditional intelligence tests (WISC, WJ, Binet) are **not** sufficient for assessment of students who may be gifted and have a specific learning disability (SLD), autism, ADHD, etc.
- Most defensible way to assess 2e gifted is to use the *Cognitive Assessment System-Second Edition (CAS2)* for the following reasons
 - CAS2 measures 'basic psychological processes' – the key to uniting the definition of SLD with the method of detecting it,
 - it yields the smallest race and ethnic differences,
 - It yields profiles for special populations,
 - PASS scores predicts achievement better than any other tests *and* these scores can be used to guide instruction

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